



SEQUENCE LISTING

<110> Gillim-Ross, Laura
Taylor, Jill
Scholl, David R.
Wentworth, David E.
Jollick, Joseph D.

<120> Compositions and Methods for Detecting Severe Acute Respiratory
Syndrome Coronavirus

<130> DHI-07986

<140> 10/699,936
<141> 2003-11-03

<160> 87

<170> PatentIn version 3.2

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<213> SARS coronavirus Urbani

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 <213> SARS-CoV Urbani

<400> 17

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Pro	Asp	Asp	Gln	Ile	Gly	Tyr	Tyr	Arg	Arg	Ala	Thr	Arg	Arg	Val	Arg
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Gly	Gly	Asp	Gly	Lys	Met	Lys	Glu	Leu	Ser	Pro	Arg	Trp	Tyr	Phe	Tyr
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Tyr	Leu	Gly	Thr	Gly	Pro	Glu	Ala	Ser	Leu	Pro	Tyr	Gly	Ala	Asn	Lys
		115					120					125			
Glu	Gly	Ile	Val	Trp	Val	Ala	Thr	Glu	Gly	Ala	Leu	Asn	Thr	Pro	Lys
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Asp	His	Ile	Gly	Thr	Arg	Asn	Pro	Asn	Asn	Asn	Ala	Ala	Thr	Val	Leu
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Gln	Leu	Pro	Gln	Gly	Thr	Thr	Leu	Pro	Lys	Gly	Phe	Tyr	Ala	Glu	Gly
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Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
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Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
 245 250 255

Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
 260 265 270

Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
 275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
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Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
 305 310 315 320

Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
 325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
 340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
 355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
 370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
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Ala Asp Ser Thr Gln Ala
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35 40 45

Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
50 55 60

Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
65 70 75 80

Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
85 90 95

Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
100 105 110

Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
115 120 125

Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
130 135 140

Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
145 150 155 160

Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
165 170 175

Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
180 185 190

Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
195 200 205

Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
210 215 220

Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
225 230 235 240

Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
245 250 255

Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
260 265 270

Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
290 295 300

Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
305 310 315 320

Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
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Ala Asp Ser Thr Gln Ala
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 Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
 50 55 60
 Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
 65 70 75 80
 Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
 85 90 95
 Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
 100 105 110
 Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
 115 120 125
 Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
 130 135 140
 Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
 145 150 155 160
 Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
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 180 185 190
 Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
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 Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
 210 215 220
 Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
 225 230 235 240
 Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
 245 250 255
 Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
 260 265 270
 Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
 275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
290 295 300

Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
305 310 315 320

Ile Gly Met Glu Ala Ala Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
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Met Asp Asp Phe Ser Arg Gln Leu Gln Asn Ser Met Ser Gly Ala Ser
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Ala Asp Ser Thr Gln Ala
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<400> 20

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Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
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Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
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Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
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Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
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Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
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Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
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Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
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Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
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Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
 180 185 190

Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
 195 200 205

Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
 210 215 220

Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
 225 230 235 240

Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
 245 250 255

Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
 260 265 270

Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
 275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
 290 295 300

Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
 305 310 315 320

Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
 325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
 340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
 355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
 370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
 385 390 395 400

Met Asp Asp Phe Ser Arg Gln Leu Gln Asn Ser Met Ser Gly Ala Ser
 405 410 415

Ala Asp Ser Thr Gln Ala
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<400> 21

Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser Asp Leu
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Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
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His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
 35 40 45

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
 50 55 60

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
 65 70 75 80

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
 85 90 95

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
 100 105 110

Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys
 115 120 125
 Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
 130 135 140
 Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
 145 150 155 160
 Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
 165 170 175
 Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly
 180 185 190
 Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp
 195 200 205
 Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu
 210 215 220
 Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro
 225 230 235 240
 Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr
 245 250 255
 Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile
 260 265 270
 Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys
 275 280 285
 Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn
 290 295 300
 Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr
 305 310 315 320
 Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser
 325 330 335
 Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr
 340 345 350
 Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly
 355 360 365

Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala
370 375 380
Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly
385 390 395 400
Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe
405 410 415
Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser
420 425 430
Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu
435 440 445
Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly
450 455 460
Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp
465 470 475 480
Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val
485 490 495
Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly
500 505 510
Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn
515 520 525
Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg
530 535 540
Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp
545 550 555 560
Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys
565 570 575
Ser Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser
580 585 590
Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr
595 600 605

Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr
 610 615 620
 Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu
 625 630 635 640
 His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile
 645 650 655
 Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser Gln Lys
 660 665 670
 Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser Ile Ala
 675 680 685
 Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile Ser Ile
 690 695 700
 Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser Val Asp Cys
 705 710 715 720
 Asn Met Tyr Ile Cys Gly Asp Ser Thr Glu Cys Ala Asn Leu Leu Leu
 725 730 735
 Gln Tyr Gly Ser Phe Cys Thr Gln Leu Asn Arg Ala Leu Ser Gly Ile
 740 745 750
 Ala Ala Glu Gln Asp Arg Asn Thr Arg Glu Val Phe Ala Gln Val Lys
 755 760 765
 Gln Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe
 770 775 780
 Ser Gln Ile Leu Pro Asp Pro Leu Lys Pro Thr Lys Arg Ser Phe Ile
 785 790 795 800
 Glu Asp Leu Leu Phe Asn Lys Val Thr Leu Ala Asp Ala Gly Phe Met
 805 810 815
 Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp Leu Ile
 820 825 830
 Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu Leu Thr
 835 840 845
 Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly Thr Ala
 850 855 860

Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe
 865 870 875 880
 Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn
 885 890 895
 Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala
 900 905 910
 Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
 915 920 925
 Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu
 930 935 940
 Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn
 945 950 955 960
 Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp
 965 970 975
 Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln
 980 985 990
 Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala
 995 1000 1005
 Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp
 1010 1015 1020
 Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala
 1025 1030 1035
 Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln
 1040 1045 1050
 Glu Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys
 1055 1060 1065
 Ala Tyr Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser
 1070 1075 1080
 Trp Phe Ile Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr
 1085 1090 1095

Thr Asp Asn Thr Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly
 1100 1105 1110

Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp
 1115 1120 1125

Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His Thr Ser
 1130 1135 1140

Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val
 1145 1150 1155

Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
 1160 1165 1170

Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr
 1175 1180 1185

Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile
 1190 1195 1200

Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys
 1205 1210 1215

Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly
 1220 1225 1230

Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys
 1235 1240 1245

Gly Val Lys Leu His Tyr Thr
 1250 1255

<210> 22
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 <212> PRT
 <213> SARS-CoV Tor2

<400> 22

Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser Asp Leu
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Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
 20 25 30

His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
 35 40 45

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
 50 55 60

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
 65 70 75 80

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
 85 90 95

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
 100 105 110

Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys
 115 120 125

Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
 130 135 140

Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
 145 150 155 160

Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
 165 170 175

Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly
 180 185 190

Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp
 195 200 205

Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu
 210 215 220

Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro
 225 230 235 240

Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr
 245 250 255

Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile
 260 265 270

Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys
 275 280 285

Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn
 290 295 300

Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr
305 310 315 320
Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser
325 330 335
Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr
340 345 350
Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly
355 360 365
Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala
370 375 380
Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly
385 390 395 400
Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe
405 410 415
Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser
420 425 430
Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu
435 440 445
Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly
450 455 460
Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp
465 470 475 480
Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val
485 490 495
Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly
500 505 510
Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn
515 520 525
Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg
530 535 540

Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp
545 550 555 560
Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys
565 570 575
Ala Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser
580 585 590
Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr
595 600 605
Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr
610 615 620
Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu
625 630 635 640
His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile
645 650 655
Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser Gln Lys
660 665 670
Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser Ile Ala
675 680 685
Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile Ser Ile
690 695 700
Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser Val Asp Cys
705 710 715 720
Asn Met Tyr Ile Cys Gly Asp Ser Thr Glu Cys Ala Asn Leu Leu Leu
725 730 735
Gln Tyr Gly Ser Phe Cys Thr Gln Leu Asn Arg Ala Leu Ser Gly Ile
740 745 750
Ala Ala Glu Gln Asp Arg Asn Thr Arg Glu Val Phe Ala Gln Val Lys
755 760 765
Gln Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe
770 775 780
Ser Gln Ile Leu Pro Asp Pro Leu Lys Pro Thr Lys Arg Ser Phe Ile
785 790 795 800

Glu Asp Leu Leu Phe Asn Lys Val Thr Leu Ala Asp Ala Gly Phe Met
 805 810 815

Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp Leu Ile
 820 825 830

Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu Leu Thr
 835 840 845

Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly Thr Ala
 850 855 860

Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe
 865 870 875 880

Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn
 885 890 895

Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala
 900 905 910

Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
 915 920 925

Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu
 930 935 940

Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn
 945 950 955 960

Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp
 965 970 975

Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln
 980 985 990

Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala
 995 1000 1005

Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp
 1010 1015 1020

Phe	Cys	Gly	Lys	Gly	Tyr	His	Leu	Met	Ser	Phe	Pro	Gln	Ala	Ala
1025						1030					1035			
Pro	His	Gly	Val	Val	Phe	Leu	His	Val	Thr	Tyr	Val	Pro	Ser	Gln
1040						1045					1050			
Glu	Arg	Asn	Phe	Thr	Thr	Ala	Pro	Ala	Ile	Cys	His	Glu	Gly	Lys
1055						1060					1065			
Ala	Tyr	Phe	Pro	Arg	Glu	Gly	Val	Phe	Val	Phe	Asn	Gly	Thr	Ser
1070						1075					1080			
Trp	Phe	Ile	Thr	Gln	Arg	Asn	Phe	Phe	Ser	Pro	Gln	Ile	Ile	Thr
1085						1090					1095			
Thr	Asp	Asn	Thr	Phe	Val	Ser	Gly	Asn	Cys	Asp	Val	Val	Ile	Gly
1100						1105					1110			
Ile	Ile	Asn	Asn	Thr	Val	Tyr	Asp	Pro	Leu	Gln	Pro	Glu	Leu	Asp
1115						1120					1125			
Ser	Phe	Lys	Glu	Glu	Leu	Asp	Lys	Tyr	Phe	Lys	Asn	His	Thr	Ser
1130						1135					1140			
Pro	Asp	Val	Asp	Leu	Gly	Asp	Ile	Ser	Gly	Ile	Asn	Ala	Ser	Val
1145						1150					1155			
Val	Asn	Ile	Gln	Lys	Glu	Ile	Asp	Arg	Leu	Asn	Glu	Val	Ala	Lys
1160						1165					1170			
Asn	Leu	Asn	Glu	Ser	Leu	Ile	Asp	Leu	Gln	Glu	Leu	Gly	Lys	Tyr
1175						1180					1185			
Glu	Gln	Tyr	Ile	Lys	Trp	Pro	Trp	Tyr	Val	Trp	Leu	Gly	Phe	Ile
1190						1195					1200			
Ala	Gly	Leu	Ile	Ala	Ile	Val	Met	Val	Thr	Ile	Leu	Leu	Cys	Cys
1205						1210					1215			
Met	Thr	Ser	Cys	Cys	Ser	Cys	Leu	Lys	Gly	Ala	Cys	Ser	Cys	Gly
1220						1225					1230			
Ser	Cys	Cys	Lys	Phe	Asp	Glu	Asp	Asp	Ser	Glu	Pro	Val	Leu	Lys
1235						1240					1245			
Gly	Val	Lys	Leu	His	Tyr	Thr								
1250						1255								

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<400> 23

Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser Asp Leu
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Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
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His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
 35 40 45

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
 50 55 60

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
 65 70 75 80

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
 85 90 95

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
 100 105 110

Ser Val Ile Ile Ile Ser Asn Ser Thr Asn Val Val Ile Arg Ala Cys
 115 120 125

Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
 130 135 140

Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
 145 150 155 160

Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
 165 170 175

Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly
 180 185 190

Ser Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp
 195 200 205

Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu
 210 215 220

Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro
 225 230 235 240
 Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr
 245 250 255
 Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile
 260 265 270
 Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys
 275 280 285
 Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn
 290 295 300
 Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr
 305 310 315 320
 Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser
 325 330 335
 Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr
 340 345 350
 Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly
 355 360 365
 Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala
 370 375 380
 Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly
 385 390 395 400
 Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe
 405 410 415
 Met Gly Cys Val Leu Ala Trp Asn Thr Gly Asn Ile Asp Ala Thr Ser
 420 425 430
 Thr Gly Asn Tyr Asp Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu
 435 440 445
 Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly
 450 455 460

Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp
 465 470 475 480
 Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val
 485 490 495
 Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly
 500 505 510
 Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn
 515 520 525
 Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg
 530 535 540
 Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp
 545 550 555 560
 Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys
 565 570 575
 Ser Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser
 580 585 590
 Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr
 595 600 605
 Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr
 610 615 620
 Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu
 625 630 635 640
 His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile
 645 650 655
 Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser Gln Lys
 660 665 670
 Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser Ile Ala
 675 680 685
 Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile Ser Ile
 690 695 700
 Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser Val Asp Cys
 705 710 715 720

Asn Met Tyr Ile Cys Gly Asp Ser Thr Glu Cys Ala Asn Leu Leu Leu
725 730 735

Gln Tyr Gly Ser Phe Cys Thr Gln Leu Asn Arg Ala Leu Ser Gly Ile
740 745 750

Ala Ala Glu Gln Asp Arg Asn Thr Arg Glu Val Phe Ala Gln Val Lys
755 760 765

Gln Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe
770 775 780

Ser Gln Ile Leu Pro Asp Pro Leu Lys Pro Thr Lys Arg Ser Phe Ile
785 790 795 800

Glu Asp Leu Pro Phe Asn Lys Val Thr Leu Ala Asp Ala Gly Phe Met
805 810 815

Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp Leu Ile
820 825 830

Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu Leu Thr
835 840 845

Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly Thr Ala
850 855 860

Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe
865 870 875 880

Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn
885 890 895

Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala
900 905 910

Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
915 920 925

Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu
930 935 940

Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn
945 950 955 960

Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp
 965 970 975

Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln
 980 985 990

Gln Leu Ile Arg Ala Ala Gly Ile Arg Ala Ser Ala Asn Leu Ala Ala
 995 1000 1005

Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp
 1010 1015 1020

Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala
 1025 1030 1035

Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln
 1040 1045 1050

Glu Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys
 1055 1060 1065

Ala Tyr Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser
 1070 1075 1080

Trp Phe Ile Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr
 1085 1090 1095

Thr Asp Asn Thr Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly
 1100 1105 1110

Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp
 1115 1120 1125

Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His Thr Ser
 1130 1135 1140

Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val
 1145 1150 1155

Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
 1160 1165 1170

Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr
 1175 1180 1185

Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile
 1190 1195 1200

Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys
1205 1210 1215

Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly
1220 1225 1230

Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys
1235 1240 1245

Gly Val Lys Leu His Tyr Thr
1250 1255

<210> 24
<211> 221
<212> PRT
<213> SARS-CoV Urbani

<400> 24

Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu Leu Lys Gln Leu Leu
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Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met
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Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile
35 40 45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe
50 55 60

Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala
65 70 75 80

Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val
85 90 95

Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn
100 105 110

Pro Glu Thr Asn Ile Leu Leu Asn Val Pro Leu Arg Gly Thr Ile Val
115 120 125

Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile
130 135 140

Arg Gly His Leu Arg Met Ala Gly His Pro Leu Gly Arg Cys Asp Ile
145 150 155 160

Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser
165 170 175

Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe
180 185 190

Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp
195 200 205

His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val Gln
210 215 220

<210> 25
<211> 76
<212> PRT
<213> SARS-CoV Urbani

<400> 25

Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser
1 5 10 15

Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
50 55 60

Leu Asn Ser Ser Glu Gly Val Pro Asp Leu Leu Val
65 70 75

<210> 26
<211> 4382
<212> PRT
<213> SARS-CoV Urbani

<400> 26

Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu
1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
 50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
 65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
 85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
 100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
 115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
 130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn
 145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
 165 170 175

Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
 180 185 190

Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
 195 200 205

Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
 210 215 220

Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
 225 230 235 240

Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu
 245 250 255

Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
 260 265 270

Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
 275 280 285

Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
 290 295 300

Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
 305 310 315 320
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
 325 330 335
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
 340 345 350
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
 355 360 365
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
 370 375 380
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
 385 390 395 400
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
 405 410 415
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
 420 425 430
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
 435 440 445
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
 450 455 460
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
 465 470 475 480
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
 485 490 495
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
 500 505 510
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
 515 520 525
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
 530 535 540

Arg	Ser	Ile	Phe	Ala	Arg	Thr	Leu	Asp	Ala	Ala	Asn	His	Ser	Ile	Pro
545					550					555					560
Asp	Leu	Gln	Arg	Ala	Ala	Val	Thr	Ile	Leu	Asp	Gly	Ile	Ser	Glu	Gln
				565					570					575	
Ser	Leu	Arg	Leu	Val	Asp	Ala	Met	Val	Tyr	Thr	Ser	Asp	Leu	Leu	Thr
			580					585					590		
Asn	Ser	Val	Ile	Ile	Met	Ala	Tyr	Val	Thr	Gly	Gly	Leu	Val	Gln	Gln
		595					600					605			
Thr	Ser	Gln	Trp	Leu	Ser	Asn	Leu	Leu	Gly	Thr	Thr	Val	Glu	Lys	Leu
						615						620			
Arg	Pro	Ile	Phe	Glu	Trp	Ile	Glu	Ala	Lys	Leu	Ser	Ala	Gly	Val	Glu
625					630					635					640
Phe	Leu	Lys	Asp	Ala	Trp	Glu	Ile	Leu	Lys	Phe	Leu	Ile	Thr	Gly	Val
				645					650					655	
Phe	Asp	Ile	Val	Lys	Gly	Gln	Ile	Gln	Val	Ala	Ser	Asp	Asn	Ile	Lys
			660					665					670		
Asp	Cys	Val	Lys	Cys	Phe	Ile	Asp	Val	Val	Asn	Lys	Ala	Leu	Glu	Met
		675					680					685			
Cys	Ile	Asp	Gln	Val	Thr	Ile	Ala	Gly	Ala	Lys	Leu	Arg	Ser	Leu	Asn
	690					695					700				
Leu	Gly	Glu	Val	Phe	Ile	Ala	Gln	Ser	Lys	Gly	Leu	Tyr	Arg	Gln	Cys
705					710					715					720
Ile	Arg	Gly	Lys	Glu	Gln	Leu	Gln	Leu	Leu	Met	Pro	Leu	Lys	Ala	Pro
				725					730					735	
Lys	Glu	Val	Thr	Phe	Leu	Glu	Gly	Asp	Ser	His	Asp	Thr	Val	Leu	Thr
			740					745					750		
Ser	Glu	Glu	Val	Val	Leu	Lys	Asn	Gly	Glu	Leu	Glu	Ala	Leu	Glu	Thr
		755					760					765			
Pro	Val	Asp	Ser	Phe	Thr	Asn	Gly	Ala	Ile	Val	Gly	Thr	Pro	Val	Cys
	770					775					780				
Val	Asn	Gly	Leu	Met	Leu	Leu	Glu	Ile	Lys	Asp	Lys	Glu	Gln	Tyr	Cys
785					790					795					800

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys
 805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp
 820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu
 835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu
 850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val
 865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile
 885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala
 900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro
 915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Ile Asp
 930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu
 945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu
 965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu
 980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly
 995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile
 1010 1015 1020

Val Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala
 1025 1030 1035

Ala Asn 1040	Ile His Leu Lys His 1045	Gly Gly Gly Val Ala 1050	Gly Ala Leu
Asn Lys 1055	Ala Thr Asn Gly Ala 1060	Met Gln Lys Glu Ser 1065	Asp Asp Tyr
Ile Lys 1070	Leu Asn Gly Pro Leu 1075	Thr Val Gly Gly Ser 1080	Cys Leu Leu
Ser Gly 1085	His Asn Leu Ala Lys 1090	Lys Cys Leu His Val 1095	Val Gly Pro
Asn Leu 1100	Asn Ala Gly Glu Asp 1105	Ile Gln Leu Leu Lys 1110	Ala Ala Tyr
Glu Asn 1115	Phe Asn Ser Gln Asp 1120	Ile Leu Leu Ala Pro 1125	Leu Leu Ser
Ala Gly 1130	Ile Phe Gly Ala Lys 1135	Pro Leu Gln Ser Leu 1140	Gln Val Cys
Val Gln 1145	Thr Val Arg Thr Gln 1150	Val Tyr Ile Ala Val 1155	Asn Asp Lys
Ala Leu 1160	Tyr Glu Gln Val Val 1165	Met Asp Tyr Leu Asp 1170	Asn Leu Lys
Pro Arg 1175	Val Glu Ala Pro Lys 1180	Gln Glu Glu Pro Pro 1185	Asn Thr Glu
Asp Ser 1190	Lys Thr Glu Glu Lys 1195	Ser Val Val Gln Lys 1200	Pro Val Asp
Val Lys 1205	Pro Lys Ile Lys Ala 1210	Cys Ile Asp Glu Val 1215	Thr Thr Thr
Leu Glu 1220	Glu Thr Lys Phe Leu 1225	Thr Asn Lys Leu Leu 1230	Leu Phe Ala
Asp Ile 1235	Asn Gly Lys Leu Tyr 1240	His Asp Ser Gln Asn 1245	Met Leu Arg
Gly Glu 1250	Asp Met Ser Phe Leu 1255	Glu Lys Asp Ala Pro 1260	Tyr Met Val
Gly Asp 1265	Val Ile Thr Ser Gly 1270	Asp Ile Thr Cys Val 1275	Val Ile Pro

Ser	Lys	Lys	Ala	Gly	Gly	Thr	Thr	Glu	Met	Leu	Ser	Arg	Ala	Leu
1280						1285					1290			
Lys	Lys	Val	Pro	Val	Asp	Glu	Tyr	Ile	Thr	Thr	Tyr	Pro	Gly	Gln
1295						1300					1305			
Gly	Cys	Ala	Gly	Tyr	Thr	Leu	Glu	Glu	Ala	Lys	Thr	Ala	Leu	Lys
1310						1315					1320			
Lys	Cys	Lys	Ser	Ala	Phe	Tyr	Val	Leu	Pro	Ser	Glu	Ala	Pro	Asn
1325						1330					1335			
Ala	Lys	Glu	Glu	Ile	Leu	Gly	Thr	Val	Ser	Trp	Asn	Leu	Arg	Glu
1340						1345					1350			
Met	Leu	Ala	His	Ala	Glu	Glu	Thr	Arg	Lys	Leu	Met	Pro	Ile	Cys
1355						1360					1365			
Met	Asp	Val	Arg	Ala	Ile	Met	Ala	Thr	Ile	Gln	Arg	Lys	Tyr	Lys
1370						1375					1380			
Gly	Ile	Lys	Ile	Gln	Glu	Gly	Ile	Val	Asp	Tyr	Gly	Val	Arg	Phe
1385						1390					1395			
Phe	Phe	Tyr	Thr	Ser	Lys	Glu	Pro	Val	Ala	Ser	Ile	Ile	Thr	Lys
1400						1405					1410			
Leu	Asn	Ser	Leu	Asn	Glu	Pro	Leu	Val	Thr	Met	Pro	Ile	Gly	Tyr
1415						1420					1425			
Val	Thr	His	Gly	Phe	Asn	Leu	Glu	Glu	Ala	Ala	Arg	Cys	Met	Arg
1430						1435					1440			
Ser	Leu	Lys	Ala	Pro	Ala	Val	Val	Ser	Val	Ser	Ser	Pro	Asp	Ala
1445						1450					1455			
Val	Thr	Thr	Tyr	Asn	Gly	Tyr	Leu	Thr	Ser	Ser	Ser	Lys	Thr	Ser
1460						1465					1470			
Glu	Glu	His	Phe	Val	Glu	Thr	Val	Ser	Leu	Ala	Gly	Ser	Tyr	Arg
1475						1480					1485			
Asp	Trp	Ser	Tyr	Ser	Gly	Gln	Arg	Thr	Glu	Leu	Gly	Val	Glu	Phe
1490						1495					1500			

Leu	Lys	Arg	Gly	Asp	Lys	Ile	Val	Tyr	His	Thr	Leu	Glu	Ser	Pro
1505						1510					1515			
Val	Glu	Phe	His	Leu	Asp	Gly	Glu	Val	Leu	Ser	Leu	Asp	Lys	Leu
1520						1525					1530			
Lys	Ser	Leu	Leu	Ser	Leu	Arg	Glu	Val	Lys	Thr	Ile	Lys	Val	Phe
1535						1540					1545			
Thr	Thr	Val	Asp	Asn	Thr	Asn	Leu	His	Thr	Gln	Leu	Val	Asp	Met
1550						1555					1560			
Ser	Met	Thr	Tyr	Gly	Gln	Gln	Phe	Gly	Pro	Thr	Tyr	Leu	Asp	Gly
1565						1570					1575			
Ala	Asp	Val	Thr	Lys	Ile	Lys	Pro	His	Val	Asn	His	Glu	Gly	Lys
1580						1585					1590			
Thr	Phe	Phe	Val	Leu	Pro	Ser	Asp	Asp	Thr	Leu	Arg	Ser	Glu	Ala
1595						1600					1605			
Phe	Glu	Tyr	Tyr	His	Thr	Leu	Asp	Glu	Ser	Phe	Leu	Gly	Arg	Tyr
1610						1615					1620			
Met	Ser	Ala	Leu	Asn	His	Thr	Lys	Lys	Trp	Lys	Phe	Pro	Gln	Val
1625						1630					1635			
Gly	Gly	Leu	Thr	Ser	Ile	Lys	Trp	Ala	Asp	Asn	Asn	Cys	Tyr	Leu
1640						1645					1650			
Ser	Ser	Val	Leu	Leu	Ala	Leu	Gln	Gln	Leu	Glu	Val	Lys	Phe	Asn
1655						1660					1665			
Ala	Pro	Ala	Leu	Gln	Glu	Ala	Tyr	Tyr	Arg	Ala	Arg	Ala	Gly	Asp
1670						1675					1680			
Ala	Ala	Asn	Phe	Cys	Ala	Leu	Ile	Leu	Ala	Tyr	Ser	Asn	Lys	Thr
1685						1690					1695			
Val	Gly	Glu	Leu	Gly	Asp	Val	Arg	Glu	Thr	Met	Thr	His	Leu	Leu
1700						1705					1710			
Gln	His	Ala	Asn	Leu	Glu	Ser	Ala	Lys	Arg	Val	Leu	Asn	Val	Val
1715						1720					1725			
Cys	Lys	His	Cys	Gly	Gln	Lys	Thr	Thr	Thr	Leu	Thr	Gly	Val	Glu
1730						1735					1740			

Ala Val 1745	Met Tyr Met Gly Thr 1750	Leu Ser Tyr Asp Asn 1755	Leu Lys Thr
Gly Val 1760	Ser Ile Pro Cys Val 1765	Cys Gly Arg Asp Ala 1770	Thr Gln Tyr
Leu Val 1775	Gln Gln Glu Ser Ser 1780	Phe Val Met Met Ser 1785	Ala Pro Pro
Ala Glu 1790	Tyr Lys Leu Gln Gln 1795	Gly Thr Phe Leu Cys 1800	Ala Asn Glu
Tyr Thr 1805	Gly Asn Tyr Gln Cys 1810	Gly His Tyr Thr His 1815	Ile Thr Ala
Lys Glu 1820	Thr Leu Tyr Arg Ile 1825	Asp Gly Ala His Leu 1830	Thr Lys Met
Ser Glu 1835	Tyr Lys Gly Pro Val 1840	Thr Asp Val Phe Tyr 1845	Lys Glu Thr
Ser Tyr 1850	Thr Thr Thr Ile Lys 1855	Pro Val Ser Tyr Lys 1860	Leu Asp Gly
Val Thr 1865	Tyr Thr Glu Ile Glu 1870	Pro Lys Leu Asp Gly 1875	Tyr Tyr Lys
Lys Asp 1880	Asn Ala Tyr Tyr Thr 1885	Glu Gln Pro Ile Asp 1890	Leu Val Pro
Thr Gln 1895	Pro Leu Pro Asn Ala 1900	Ser Phe Asp Asn Phe 1905	Lys Leu Thr
Cys Ser 1910	Asn Thr Lys Phe Ala 1915	Asp Asp Leu Asn Gln 1920	Met Thr Gly
Phe Thr 1925	Lys Pro Ala Ser Arg 1930	Glu Leu Ser Val Thr 1935	Phe Phe Pro
Asp Leu 1940	Asn Gly Asp Val Val 1945	Ala Ile Asp Tyr Arg 1950	His Tyr Ser
Ala Ser 1955	Phe Lys Lys Gly Ala 1960	Lys Leu Leu His Lys 1965	Pro Ile Val

Trp His 1970	Ile Asn Gln Ala Thr 1975	Thr Lys Thr Thr Phe 1980	Lys Pro Asn
Thr Trp 1985	Cys Leu Arg Cys Leu 1990	Trp Ser Thr Lys Pro 1995	Val Asp Thr
Ser Asn 2000	Ser Phe Glu Val Leu 2005	Ala Val Glu Asp Thr 2010	Gln Gly Met
Asp Asn 2015	Leu Ala Cys Glu Ser 2020	Gln Gln Pro Thr Ser 2025	Glu Glu Val
Val Glu 2030	Asn Pro Thr Ile Gln 2035	Lys Glu Val Ile Glu 2040	Cys Asp Val
Lys Thr 2045	Thr Glu Val Val Gly 2050	Asn Val Ile Leu Lys 2055	Pro Ser Asp
Glu Gly 2060	Val Lys Val Thr Gln 2065	Glu Leu Gly His Glu 2070	Asp Leu Met
Ala Ala 2075	Tyr Val Glu Asn Thr 2080	Ser Ile Thr Ile Lys 2085	Lys Pro Asn
Glu Leu 2090	Ser Leu Ala Leu Gly 2095	Leu Lys Thr Ile Ala 2100	Thr His Gly
Ile Ala 2105	Ala Ile Asn Ser Val 2110	Pro Trp Ser Lys Ile 2115	Leu Ala Tyr
Val Lys 2120	Pro Phe Leu Gly Gln 2125	Ala Ala Ile Thr Thr 2130	Ser Asn Cys
Ala Lys 2135	Arg Leu Ala Gln Arg 2140	Val Phe Asn Asn Tyr 2145	Met Pro Tyr
Val Phe 2150	Thr Leu Leu Phe Gln 2155	Leu Cys Thr Phe Thr 2160	Lys Ser Thr
Asn Ser 2165	Arg Ile Arg Ala Ser 2170	Leu Pro Thr Thr Ile 2175	Ala Lys Asn
Ser Val 2180	Lys Ser Val Ala Lys 2185	Leu Cys Leu Asp Ala 2190	Gly Ile Asn
Tyr Val 2195	Lys Ser Pro Lys Phe 2200	Ser Lys Leu Phe Thr 2205	Ile Ala Met

Trp	Leu	Leu	Leu	Leu	Ser	Ile	Cys	Leu	Gly	Ser	Leu	Ile	Cys	Val
2210						2215					2220			
Thr	Ala	Ala	Phe	Gly	Val	Leu	Leu	Ser	Asn	Phe	Gly	Ala	Pro	Ser
2225						2230					2235			
Tyr	Cys	Asn	Gly	Val	Arg	Glu	Leu	Tyr	Leu	Asn	Ser	Ser	Asn	Val
2240						2245					2250			
Thr	Thr	Met	Asp	Phe	Cys	Glu	Gly	Ser	Phe	Pro	Cys	Ser	Ile	Cys
2255						2260					2265			
Leu	Ser	Gly	Leu	Asp	Ser	Leu	Asp	Ser	Tyr	Pro	Ala	Leu	Glu	Thr
2270						2275					2280			
Ile	Gln	Val	Thr	Ile	Ser	Ser	Tyr	Lys	Leu	Asp	Leu	Thr	Ile	Leu
2285						2290					2295			
Gly	Leu	Ala	Ala	Glu	Trp	Val	Leu	Ala	Tyr	Met	Leu	Phe	Thr	Lys
2300						2305					2310			
Phe	Phe	Tyr	Leu	Leu	Gly	Leu	Ser	Ala	Ile	Met	Gln	Val	Phe	Phe
2315						2320					2325			
Gly	Tyr	Phe	Ala	Ser	His	Phe	Ile	Ser	Asn	Ser	Trp	Leu	Met	Trp
2330						2335					2340			
Phe	Ile	Ile	Ser	Ile	Val	Gln	Met	Ala	Pro	Val	Ser	Ala	Met	Val
2345						2350					2355			
Arg	Met	Tyr	Ile	Phe	Phe	Ala	Ser	Phe	Tyr	Tyr	Ile	Trp	Lys	Ser
2360						2365					2370			
Tyr	Val	His	Ile	Met	Asp	Gly	Cys	Thr	Ser	Ser	Thr	Cys	Met	Met
2375						2380					2385			
Cys	Tyr	Lys	Arg	Asn	Arg	Ala	Thr	Arg	Val	Glu	Cys	Thr	Thr	Ile
2390						2395					2400			
Val	Asn	Gly	Met	Lys	Arg	Ser	Phe	Tyr	Val	Tyr	Ala	Asn	Gly	Gly
2405						2410					2415			
Arg	Gly	Phe	Cys	Lys	Thr	His	Asn	Trp	Asn	Cys	Leu	Asn	Cys	Asp
2420						2425					2430			

Thr	Phe	Cys	Thr	Gly	Ser	Thr	Phe	Ile	Ser	Asp	Glu	Val	Ala	Arg
2435						2440					2445			
Asp	Leu	Ser	Leu	Gln	Phe	Lys	Arg	Pro	Ile	Asn	Pro	Thr	Asp	Gln
2450						2455					2460			
Ser	Ser	Tyr	Ile	Val	Asp	Ser	Val	Ala	Val	Lys	Asn	Gly	Ala	Leu
2465						2470					2475			
His	Leu	Tyr	Phe	Asp	Lys	Ala	Gly	Gln	Lys	Thr	Tyr	Glu	Arg	His
2480						2485					2490			
Pro	Leu	Ser	His	Phe	Val	Asn	Leu	Asp	Asn	Leu	Arg	Ala	Asn	Asn
2495						2500					2505			
Thr	Lys	Gly	Ser	Leu	Pro	Ile	Asn	Val	Ile	Val	Phe	Asp	Gly	Lys
2510						2515					2520			
Ser	Lys	Cys	Asp	Glu	Ser	Ala	Ser	Lys	Ser	Ala	Ser	Val	Tyr	Tyr
2525						2530					2535			
Ser	Gln	Leu	Met	Cys	Gln	Pro	Ile	Leu	Leu	Leu	Asp	Gln	Val	Leu
2540						2545					2550			
Val	Ser	Asp	Val	Gly	Asp	Ser	Thr	Glu	Val	Ser	Val	Lys	Met	Phe
2555						2560					2565			
Asp	Ala	Tyr	Val	Asp	Thr	Phe	Ser	Ala	Thr	Phe	Ser	Val	Pro	Met
2570						2575					2580			
Glu	Lys	Leu	Lys	Ala	Leu	Val	Ala	Thr	Ala	His	Ser	Glu	Leu	Ala
2585						2590					2595			
Lys	Gly	Val	Ala	Leu	Asp	Gly	Val	Leu	Ser	Thr	Phe	Val	Ser	Ala
2600						2605					2610			
Ala	Arg	Gln	Gly	Val	Val	Asp	Thr	Asp	Val	Asp	Thr	Lys	Asp	Val
2615						2620					2625			
Ile	Glu	Cys	Leu	Lys	Leu	Ser	His	His	Ser	Asp	Leu	Glu	Val	Thr
2630						2635					2640			
Gly	Asp	Ser	Cys	Asn	Asn	Phe	Met	Leu	Thr	Tyr	Asn	Lys	Val	Glu
2645						2650					2655			
Asn	Met	Thr	Pro	Arg	Asp	Leu	Gly	Ala	Cys	Ile	Asp	Cys	Asn	Ala
2660						2665					2670			

Arg His 2675	Ile Asn Ala Gln Val 2680	Ala Lys Ser His Asn 2685	Val Ser Leu
Ile Trp 2690	Asn Val Lys Asp Tyr 2695	Met Ser Leu Ser Glu 2700	Gln Leu Arg
Lys Gln 2705	Ile Arg Ser Ala Ala 2710	Lys Lys Asn Asn Ile 2715	Pro Phe Arg
Leu Thr 2720	Cys Ala Thr Thr Arg 2725	Gln Val Val Asn Val 2730	Ile Thr Thr
Lys Ile 2735	Ser Leu Lys Gly Gly 2740	Lys Ile Val Ser Thr 2745	Cys Phe Lys
Leu Met 2750	Leu Lys Ala Thr Leu 2755	Leu Cys Val Leu Ala 2760	Ala Leu Val
Cys Tyr 2765	Ile Val Met Pro Val 2770	His Thr Leu Ser Ile 2775	His Asp Gly
Tyr Thr 2780	Asn Glu Ile Ile Gly 2785	Tyr Lys Ala Ile Gln 2790	Asp Gly Val
Thr Arg 2795	Asp Ile Ile Ser Thr 2800	Asp Asp Cys Phe Ala 2805	Asn Lys His
Ala Gly 2810	Phe Asp Ala Trp Phe 2815	Ser Gln Arg Gly Gly 2820	Ser Tyr Lys
Asn Asp 2825	Lys Ser Cys Pro Val 2830	Val Ala Ala Ile Ile 2835	Thr Arg Glu
Ile Gly 2840	Phe Ile Val Pro Gly 2845	Leu Pro Gly Thr Val 2850	Leu Arg Ala
Ile Asn 2855	Gly Asp Phe Leu His 2860	Phe Leu Pro Arg Val 2865	Phe Ser Ala
Val Gly 2870	Asn Ile Cys Tyr Thr 2875	Pro Ser Lys Leu Ile 2880	Glu Tyr Ser
Asp Phe 2885	Ala Thr Ser Ala Cys 2890	Val Leu Ala Ala Glu 2895	Cys Thr Ile

Phe	Lys	Asp	Ala	Met	Gly	Lys	Pro	Val	Pro	Tyr	Cys	Tyr	Asp	Thr
2900						2905					2910			
Asn	Leu	Leu	Glu	Gly	Ser	Ile	Ser	Tyr	Ser	Glu	Leu	Arg	Pro	Asp
2915						2920					2925			
Thr	Arg	Tyr	Val	Leu	Met	Asp	Gly	Ser	Ile	Ile	Gln	Phe	Pro	Asn
2930						2935					2940			
Thr	Tyr	Leu	Glu	Gly	Ser	Val	Arg	Val	Val	Thr	Thr	Phe	Asp	Ala
2945						2950					2955			
Glu	Tyr	Cys	Arg	His	Gly	Thr	Cys	Glu	Arg	Ser	Glu	Val	Gly	Ile
2960						2965					2970			
Cys	Leu	Ser	Thr	Ser	Gly	Arg	Trp	Val	Leu	Asn	Asn	Glu	His	Tyr
2975						2980					2985			
Arg	Ala	Leu	Ser	Gly	Val	Phe	Cys	Gly	Val	Asp	Ala	Met	Asn	Leu
2990						2995					3000			
Ile	Ala	Asn	Ile	Phe	Thr	Pro	Leu	Val	Gln	Pro	Val	Gly	Ala	Leu
3005						3010					3015			
Asp	Val	Ser	Ala	Ser	Val	Val	Ala	Gly	Gly	Ile	Ile	Ala	Ile	Leu
3020						3025					3030			
Val	Thr	Cys	Ala	Ala	Tyr	Tyr	Phe	Met	Lys	Phe	Arg	Arg	Val	Phe
3035						3040					3045			
Gly	Glu	Tyr	Asn	His	Val	Val	Ala	Ala	Asn	Ala	Leu	Leu	Phe	Leu
3050						3055					3060			
Met	Ser	Phe	Thr	Ile	Leu	Cys	Leu	Val	Pro	Ala	Tyr	Ser	Phe	Leu
3065						3070					3075			
Pro	Gly	Val	Tyr	Ser	Val	Phe	Tyr	Leu	Tyr	Leu	Thr	Phe	Tyr	Phe
3080						3085					3090			
Thr	Asn	Asp	Val	Ser	Phe	Leu	Ala	His	Leu	Gln	Trp	Phe	Ala	Met
3095						3100					3105			
Phe	Ser	Pro	Ile	Val	Pro	Phe	Trp	Ile	Thr	Ala	Ile	Tyr	Val	Phe
3110						3115					3120			
Cys	Ile	Ser	Leu	Lys	His	Cys	His	Trp	Phe	Phe	Asn	Asn	Tyr	Leu
3125						3130					3135			

Arg Lys 3140	Arg Val Met Phe Asn 3145	Gly Val Thr Phe Ser 3150	Thr Phe Glu
Glu Ala 3155	Ala Leu Cys Thr Phe 3160	Leu Leu Asn Lys Glu 3165	Met Tyr Leu
Lys Leu 3170	Arg Ser Glu Thr Leu 3175	Leu Pro Leu Thr Gln 3180	Tyr Asn Arg
Tyr Leu 3185	Ala Leu Tyr Asn Lys 3190	Tyr Lys Tyr Phe Ser 3195	Gly Ala Leu
Asp Thr 3200	Thr Ser Tyr Arg Glu 3205	Ala Ala Cys Cys His 3210	Leu Ala Lys
Ala Leu 3215	Asn Asp Phe Ser Asn 3220	Ser Gly Ala Asp Val 3225	Leu Tyr Gln
Pro Pro 3230	Gln Thr Ser Ile Thr 3235	Ser Ala Val Leu Gln 3240	Ser Gly Phe
Arg Lys 3245	Met Ala Phe Pro Ser 3250	Gly Lys Val Glu Gly 3255	Cys Met Val
Gln Val 3260	Thr Cys Gly Thr Thr 3265	Thr Leu Asn Gly Leu 3270	Trp Leu Asp
Asp Thr 3275	Val Tyr Cys Pro Arg 3280	His Val Ile Cys Thr 3285	Ala Glu Asp
Met Leu 3290	Asn Pro Asn Tyr Glu 3295	Asp Leu Leu Ile Arg 3300	Lys Ser Asn
His Ser 3305	Phe Leu Val Gln Ala 3310	Gly Asn Val Gln Leu 3315	Arg Val Ile
Gly His 3320	Ser Met Gln Asn Cys 3325	Leu Leu Arg Leu Lys 3330	Val Asp Thr
Ser Asn 3335	Pro Lys Thr Pro Lys 3340	Tyr Lys Phe Val Arg 3345	Ile Gln Pro
Gly Gln 3350	Thr Phe Ser Val Leu 3355	Ala Cys Tyr Asn Gly 3360	Ser Pro Ser

Gly Val 3365	Tyr Gln Cys Ala Met 3370	Arg Pro Asn His Thr 3375	Ile Lys Gly
Ser Phe 3380	Leu Asn Gly Ser Cys 3385	Gly Ser Val Gly Phe 3390	Asn Ile Asp
Tyr Asp 3395	Cys Val Ser Phe Cys 3400	Tyr Met His His Met 3405	Glu Leu Pro
Thr Gly 3410	Val His Ala Gly Thr 3415	Asp Leu Glu Gly Lys 3420	Phe Tyr Gly
Pro Phe 3425	Val Asp Arg Gln Thr 3430	Ala Gln Ala Ala Gly 3435	Thr Asp Thr
Thr Ile 3440	Thr Leu Asn Val Leu 3445	Ala Trp Leu Tyr Ala 3450	Ala Val Ile
Asn Gly 3455	Asp Arg Trp Phe Leu 3460	Asn Arg Phe Thr Thr 3465	Thr Leu Asn
Asp Phe 3470	Asn Leu Val Ala Met 3475	Lys Tyr Asn Tyr Glu 3480	Pro Leu Thr
Gln Asp 3485	His Val Asp Ile Leu 3490	Gly Pro Leu Ser Ala 3495	Gln Thr Gly
Ile Ala 3500	Val Leu Asp Met Cys 3505	Ala Ala Leu Lys Glu 3510	Leu Leu Gln
Asn Gly 3515	Met Asn Gly Arg Thr 3520	Ile Leu Gly Ser Thr 3525	Ile Leu Glu
Asp Glu 3530	Phe Thr Pro Phe Asp 3535	Val Val Arg Gln Cys 3540	Ser Gly Val
Thr Phe 3545	Gln Gly Lys Phe Lys 3550	Lys Ile Val Lys Gly 3555	Thr His His
Trp Met 3560	Leu Leu Thr Phe Leu 3565	Thr Ser Leu Leu Ile 3570	Leu Val Gln
Ser Thr 3575	Gln Trp Ser Leu Phe 3580	Phe Phe Val Tyr Glu 3585	Asn Ala Phe
Leu Pro 3590	Phe Thr Leu Gly Ile 3595	Met Ala Ile Ala Ala 3600	Cys Ala Met

Leu	Leu	Val	Lys	His	Lys	His	Ala	Phe	Leu	Cys	Leu	Phe	Leu	Leu
3605						3610					3615			
Pro	Ser	Leu	Ala	Thr	Val	Ala	Tyr	Phe	Asn	Met	Val	Tyr	Met	Pro
3620						3625					3630			
Ala	Ser	Trp	Val	Met	Arg	Ile	Met	Thr	Trp	Leu	Glu	Leu	Ala	Asp
3635						3640					3645			
Thr	Ser	Leu	Ser	Gly	Tyr	Arg	Leu	Lys	Asp	Cys	Val	Met	Tyr	Ala
3650						3655					3660			
Ser	Ala	Leu	Val	Leu	Leu	Ile	Leu	Met	Thr	Ala	Arg	Thr	Val	Tyr
3665						3670					3675			
Asp	Asp	Ala	Ala	Arg	Arg	Val	Trp	Thr	Leu	Met	Asn	Val	Ile	Thr
3680						3685					3690			
Leu	Val	Tyr	Lys	Val	Tyr	Tyr	Gly	Asn	Ala	Leu	Asp	Gln	Ala	Ile
3695						3700					3705			
Ser	Met	Trp	Ala	Leu	Val	Ile	Ser	Val	Thr	Ser	Asn	Tyr	Ser	Gly
3710						3715					3720			
Val	Val	Thr	Thr	Ile	Met	Phe	Leu	Ala	Arg	Ala	Ile	Val	Phe	Val
3725						3730					3735			
Cys	Val	Glu	Tyr	Tyr	Pro	Leu	Leu	Phe	Ile	Thr	Gly	Asn	Thr	Leu
3740						3745					3750			
Gln	Cys	Ile	Met	Leu	Val	Tyr	Cys	Phe	Leu	Gly	Tyr	Cys	Cys	Cys
3755						3760					3765			
Cys	Tyr	Phe	Gly	Leu	Phe	Cys	Leu	Leu	Asn	Arg	Tyr	Phe	Arg	Leu
3770						3775					3780			
Thr	Leu	Gly	Val	Tyr	Asp	Tyr	Leu	Val	Ser	Thr	Gln	Glu	Phe	Arg
3785						3790					3795			
Tyr	Met	Asn	Ser	Gln	Gly	Leu	Leu	Pro	Pro	Lys	Ser	Ser	Ile	Asp
3800						3805					3810			

Ala Phe	Lys Leu	Asn Ile	Lys	Leu Leu	Gly Ile	Gly	Gly Lys	Pro	
3815			3820			3825			
Cys Ile	Lys Val	Ala Thr	Val	Gln Ser	Lys Met	Ser	Asp Val	Lys	
3830			3835			3840			
Cys Thr	Ser Val	Val Leu	Leu	Ser Val	Leu Gln	Gln	Leu Arg	Val	
3845			3850			3855			
Glu Ser	Ser Ser	Lys Leu	Trp	Ala Gln	Cys Val	Gln	Leu His	Asn	
3860			3865			3870			
Asp Ile	Leu Leu	Ala Lys	Asp	Thr Thr	Glu Ala	Phe	Glu Lys	Met	
3875			3880			3885			
Val Ser	Leu Leu	Ser Val	Leu	Leu Ser	Met Gln	Gly	Ala Val	Asp	
3890			3895			3900			
Ile Asn	Arg Leu	Cys Glu	Glu	Met Leu	Asp Asn	Arg	Ala Thr	Leu	
3905			3910			3915			
Gln Ala	Ile Ala	Ser Glu	Phe	Ser Ser	Leu Pro	Ser	Tyr Ala	Ala	
3920			3925			3930			
Tyr Ala	Thr Ala	Gln Glu	Ala	Tyr Glu	Gln Ala	Val	Ala Asn	Gly	
3935			3940			3945			
Asp Ser	Glu Val	Val Leu	Lys	Lys Leu	Lys Lys	Ser	Leu Asn	Val	
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Ala Lys	Ser Glu	Phe Asp	Arg	Asp Ala	Ala Met	Gln	Arg Lys	Leu	
3965			3970			3975			
Glu Lys	Met Ala	Asp Gln	Ala	Met Thr	Gln Met	Tyr	Lys Gln	Ala	
3980			3985			3990			
Arg Ser	Glu Asp	Lys Arg	Ala	Lys Val	Thr Ser	Ala	Met Gln	Thr	
3995			4000			4005			
Met Leu	Phe Thr	Met Leu	Arg	Lys Leu	Asp Asn	Asp	Ala Leu	Asn	
4010			4015			4020			
Asn Ile	Ile Asn	Asn Ala	Arg	Asp Gly	Cys Val	Pro	Leu Asn	Ile	
4025			4030			4035			
Ile Pro	Leu Thr	Thr Ala	Ala	Lys Leu	Met Val	Val	Val Pro	Asp	
4040			4045			4050			

Tyr	Gly	Thr	Tyr	Lys	Asn	Thr	Cys	Asp	Gly	Asn	Thr	Phe	Thr	Tyr
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Ala	Ser	Ala	Leu	Trp	Glu	Ile	Gln	Gln	Val	Val	Asp	Ala	Asp	Ser
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Lys	Ile	Val	Gln	Leu	Ser	Glu	Ile	Asn	Met	Asp	Asn	Ser	Pro	Asn
4085						4090					4095			
Leu	Ala	Trp	Pro	Leu	Ile	Val	Thr	Ala	Leu	Arg	Ala	Asn	Ser	Ala
4100						4105					4110			
Val	Lys	Leu	Gln	Asn	Asn	Glu	Leu	Ser	Pro	Val	Ala	Leu	Arg	Gln
4115						4120					4125			
Met	Ser	Cys	Ala	Ala	Gly	Thr	Thr	Gln	Thr	Ala	Cys	Thr	Asp	Asp
4130						4135					4140			
Asn	Ala	Leu	Ala	Tyr	Tyr	Asn	Asn	Ser	Lys	Gly	Gly	Arg	Phe	Val
4145						4150					4155			
Leu	Ala	Leu	Leu	Ser	Asp	His	Gln	Asp	Leu	Lys	Trp	Ala	Arg	Phe
4160						4165					4170			
Pro	Lys	Ser	Asp	Gly	Thr	Gly	Thr	Ile	Tyr	Thr	Glu	Leu	Glu	Pro
4175						4180					4185			
Pro	Cys	Arg	Phe	Val	Thr	Asp	Thr	Pro	Lys	Gly	Pro	Lys	Val	Lys
4190						4195					4200			
Tyr	Leu	Tyr	Phe	Ile	Lys	Gly	Leu	Asn	Asn	Leu	Asn	Arg	Gly	Met
4205						4210					4215			
Val	Leu	Gly	Ser	Leu	Ala	Ala	Thr	Val	Arg	Leu	Gln	Ala	Gly	Asn
4220						4225					4230			
Ala	Thr	Glu	Val	Pro	Ala	Asn	Ser	Thr	Val	Leu	Ser	Phe	Cys	Ala
4235						4240					4245			
Phe	Ala	Val	Asp	Pro	Ala	Lys	Ala	Tyr	Lys	Asp	Tyr	Leu	Ala	Ser
4250						4255					4260			
Gly	Gly	Gln	Pro	Ile	Thr	Asn	Cys	Val	Lys	Met	Leu	Cys	Thr	His
4265						4270					4275			

Thr Gly Thr Gly Gln Ala Ile Thr Val Thr Pro Glu Ala Asn Met
4280 4285 4290

Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys Leu Tyr Cys Arg
4295 4300 4305

Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys Asp Leu Lys
4310 4315 4320

Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp Pro Val
4325 4330 4335

Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met Trp
4340 4345 4350

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Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Gly Phe Ala Val
4370 4375 4380

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<211> 7073
<212> PRT
<213> SARS-CoV Tor2

<400> 27

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Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
 115 120 125
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
 130 135 140
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn
 145 150 155 160
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
 165 170 175
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
 180 185 190
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
 195 200 205
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
 210 215 220
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
 225 230 235 240
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu
 245 250 255
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
 260 265 270
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
 275 280 285
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
 290 295 300
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
 305 310 315 320
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
 325 330 335
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
 340 345 350
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
 355 360 365

Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
 370 375 380

Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
 385 390 395 400

Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
 405 410 415

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
 420 425 430

Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
 435 440 445

Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
 450 455 460

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
 465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
 485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
 500 505 510

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
 515 520 525

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
 530 535 540

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro
 545 550 555 560

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln
 565 570 575

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr
 580 585 590

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln
 595 600 605

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu
 610 615 620
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu
 625 630 635 640
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val
 645 650 655
 Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys
 660 665 670
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met
 675 680 685
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn
 690 695 700
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys
 705 710 715 720
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro
 725 730 735
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr
 740 745 750
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr
 755 760 765
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys
 770 775 780
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys
 785 790 795 800
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys
 805 810 815
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp
 820 825 830
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu
 835 840 845
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu
 850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val
 865 870 875 880
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile
 885 890 895
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala
 900 905 910
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro
 915 920 925
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp
 930 935 940
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu
 945 950 955 960
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu
 965 970 975
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu
 980 985 990
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly
 995 1000 1005
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile
 1010 1015 1020
 Val Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala
 1025 1030 1035
 Ala Asn Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu
 1040 1045 1050
 Asn Lys Ala Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr
 1055 1060 1065
 Ile Lys Leu Asn Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu
 1070 1075 1080
 Ser Gly His Asn Leu Ala Lys Lys Cys Leu His Val Val Gly Pro
 1085 1090 1095

Asn	Leu	Asn	Ala	Gly	Glu	Asp	Ile	Gln	Leu	Leu	Lys	Ala	Ala	Tyr
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Glu	Asn	Phe	Asn	Ser	Gln	Asp	Ile	Leu	Leu	Ala	Pro	Leu	Leu	Ser
1115						1120					1125			
Ala	Gly	Ile	Phe	Gly	Ala	Lys	Pro	Leu	Gln	Ser	Leu	Gln	Val	Cys
1130						1135					1140			
Val	Gln	Thr	Val	Arg	Thr	Gln	Val	Tyr	Ile	Ala	Val	Asn	Asp	Lys
1145						1150					1155			
Ala	Leu	Tyr	Glu	Gln	Val	Val	Met	Asp	Tyr	Leu	Asp	Asn	Leu	Lys
1160						1165					1170			
Pro	Arg	Val	Glu	Ala	Pro	Lys	Gln	Glu	Glu	Pro	Pro	Asn	Thr	Glu
1175						1180					1185			
Asp	Ser	Lys	Thr	Glu	Glu	Lys	Ser	Val	Val	Gln	Lys	Pro	Val	Asp
1190						1195					1200			
Val	Lys	Pro	Lys	Ile	Lys	Ala	Cys	Ile	Asp	Glu	Val	Thr	Thr	Thr
1205						1210					1215			
Leu	Glu	Glu	Thr	Lys	Phe	Leu	Thr	Asn	Lys	Leu	Leu	Leu	Phe	Ala
1220						1225					1230			
Asp	Ile	Asn	Gly	Lys	Leu	Tyr	His	Asp	Ser	Gln	Asn	Met	Leu	Arg
1235						1240					1245			
Gly	Glu	Asp	Met	Ser	Phe	Leu	Glu	Lys	Asp	Ala	Pro	Tyr	Met	Val
1250						1255					1260			
Gly	Asp	Val	Ile	Thr	Ser	Gly	Asp	Ile	Thr	Cys	Val	Val	Ile	Pro
1265						1270					1275			
Ser	Lys	Lys	Ala	Gly	Gly	Thr	Thr	Glu	Met	Leu	Ser	Arg	Ala	Leu
1280						1285					1290			
Lys	Lys	Val	Pro	Val	Asp	Glu	Tyr	Ile	Thr	Thr	Tyr	Pro	Gly	Gln
1295						1300					1305			
Gly	Cys	Ala	Gly	Tyr	Thr	Leu	Glu	Glu	Ala	Lys	Thr	Ala	Leu	Lys
1310						1315					1320			
Lys	Cys	Lys	Ser	Ala	Phe	Tyr	Val	Leu	Pro	Ser	Glu	Ala	Pro	Asn
1325						1330					1335			

Ala Lys	Glu Glu Ile Leu Gly	Thr Val Ser Trp Asn	Leu Arg Glu
1340	1345	1350	
Met Leu	Ala His Ala Glu Glu	Thr Arg Lys Leu Met	Pro Ile Cys
1355	1360	1365	
Met Asp	Val Arg Ala Ile Met	Ala Thr Ile Gln Arg	Lys Tyr Lys
1370	1375	1380	
Gly Ile	Lys Ile Gln Glu Gly	Ile Val Asp Tyr Gly	Val Arg Phe
1385	1390	1395	
Phe Phe	Tyr Thr Ser Lys Glu	Pro Val Ala Ser Ile	Ile Thr Lys
1400	1405	1410	
Leu Asn	Ser Leu Asn Glu Pro	Leu Val Thr Met Pro	Ile Gly Tyr
1415	1420	1425	
Val Thr	His Gly Phe Asn Leu	Glu Glu Ala Ala Arg	Cys Met Arg
1430	1435	1440	
Ser Leu	Lys Ala Pro Ala Val	Val Ser Val Ser Ser	Pro Asp Ala
1445	1450	1455	
Val Thr	Thr Tyr Asn Gly Tyr	Leu Thr Ser Ser Ser	Lys Thr Ser
1460	1465	1470	
Glu Glu	His Phe Val Glu Thr	Val Ser Leu Ala Gly	Ser Tyr Arg
1475	1480	1485	
Asp Trp	Ser Tyr Ser Gly Gln	Arg Thr Glu Leu Gly	Val Glu Phe
1490	1495	1500	
Leu Lys	Arg Gly Asp Lys Ile	Val Tyr His Thr Leu	Glu Ser Pro
1505	1510	1515	
Val Glu	Phe His Leu Asp Gly	Glu Val Leu Ser Leu	Asp Lys Leu
1520	1525	1530	
Lys Ser	Leu Leu Ser Leu Arg	Glu Val Lys Thr Ile	Lys Val Phe
1535	1540	1545	
Thr Thr	Val Asp Asn Thr Asn	Leu His Thr Gln Leu	Val Asp Met
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Ser Met 1565	Thr Tyr Gly Gln Gln 1570	Phe Gly Pro Thr Tyr 1575	Leu Asp Gly
Ala Asp 1580	Val Thr Lys Ile Lys 1585	Pro His Val Asn His 1590	Glu Gly Lys
Thr Phe 1595	Phe Val Leu Pro Ser 1600	Asp Asp Thr Leu Arg 1605	Ser Glu Ala
Phe Glu 1610	Tyr Tyr His Thr Leu 1615	Asp Glu Ser Phe Leu 1620	Gly Arg Tyr
Met Ser 1625	Ala Leu Asn His Thr 1630	Lys Lys Trp Lys Phe 1635	Pro Gln Val
Gly Gly 1640	Leu Thr Ser Ile Lys 1645	Trp Ala Asp Asn Asn 1650	Cys Tyr Leu
Ser Ser 1655	Val Leu Leu Ala Leu 1660	Gln Gln Leu Glu Val 1665	Lys Phe Asn
Ala Pro 1670	Ala Leu Gln Glu Ala 1675	Tyr Tyr Arg Ala Arg 1680	Ala Gly Asp
Ala Ala 1685	Asn Phe Cys Ala Leu 1690	Ile Leu Ala Tyr Ser 1695	Asn Lys Thr
Val Gly 1700	Glu Leu Gly Asp Val 1705	Arg Glu Thr Met Thr 1710	His Leu Leu
Gln His 1715	Ala Asn Leu Glu Ser 1720	Ala Lys Arg Val Leu 1725	Asn Val Val
Cys Lys 1730	His Cys Gly Gln Lys 1735	Thr Thr Thr Leu Thr 1740	Gly Val Glu
Ala Val 1745	Met Tyr Met Gly Thr 1750	Leu Ser Tyr Asp Asn 1755	Leu Lys Thr
Gly Val 1760	Ser Ile Pro Cys Val 1765	Cys Gly Arg Asp Ala 1770	Thr Gln Tyr
Leu Val 1775	Gln Gln Glu Ser Ser 1780	Phe Val Met Met Ser 1785	Ala Pro Pro
Ala Glu 1790	Tyr Lys Leu Gln Gln 1795	Gly Thr Phe Leu Cys 1800	Ala Asn Glu

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Lys	Glu	Thr	Leu	Tyr	Arg	Ile	Asp	Gly	Ala	His	Leu	Thr	Lys	Met
1820						1825					1830			
Ser	Glu	Tyr	Lys	Gly	Pro	Val	Thr	Asp	Val	Phe	Tyr	Lys	Glu	Thr
1835						1840					1845			
Ser	Tyr	Thr	Thr	Thr	Ile	Lys	Pro	Val	Ser	Tyr	Lys	Leu	Asp	Gly
1850						1855					1860			
Val	Thr	Tyr	Thr	Glu	Ile	Glu	Pro	Lys	Leu	Asp	Gly	Tyr	Tyr	Lys
1865						1870					1875			
Lys	Asp	Asn	Ala	Tyr	Tyr	Thr	Glu	Gln	Pro	Ile	Asp	Leu	Val	Pro
1880						1885					1890			
Thr	Gln	Pro	Leu	Pro	Asn	Ala	Ser	Phe	Asp	Asn	Phe	Lys	Leu	Thr
1895						1900					1905			
Cys	Ser	Asn	Thr	Lys	Phe	Ala	Asp	Asp	Leu	Asn	Gln	Met	Thr	Gly
1910						1915					1920			
Phe	Thr	Lys	Pro	Ala	Ser	Arg	Glu	Leu	Ser	Val	Thr	Phe	Phe	Pro
1925						1930					1935			
Asp	Leu	Asn	Gly	Asp	Val	Val	Ala	Ile	Asp	Tyr	Arg	His	Tyr	Ser
1940						1945					1950			
Ala	Ser	Phe	Lys	Lys	Gly	Ala	Lys	Leu	Leu	His	Lys	Pro	Ile	Val
1955						1960					1965			
Trp	His	Ile	Asn	Gln	Ala	Thr	Thr	Lys	Thr	Thr	Phe	Lys	Pro	Asn
1970						1975					1980			
Thr	Trp	Cys	Leu	Arg	Cys	Leu	Trp	Ser	Thr	Lys	Pro	Val	Asp	Thr
1985						1990					1995			
Ser	Asn	Ser	Phe	Glu	Val	Leu	Ala	Val	Glu	Asp	Thr	Gln	Gly	Met
2000						2005					2010			
Asp	Asn	Leu	Ala	Cys	Glu	Ser	Gln	Gln	Pro	Thr	Ser	Glu	Glu	Val
2015						2020					2025			

Val	Glu	Asn	Pro	Thr	Ile	Gln	Lys	Glu	Val	Ile	Glu	Cys	Asp	Val
2030						2035					2040			
Lys	Thr	Thr	Glu	Val	Val	Gly	Asn	Val	Ile	Leu	Lys	Pro	Ser	Asp
2045						2050					2055			
Glu	Gly	Val	Lys	Val	Thr	Gln	Glu	Leu	Gly	His	Glu	Asp	Leu	Met
2060						2065					2070			
Ala	Ala	Tyr	Val	Glu	Asn	Thr	Ser	Ile	Thr	Ile	Lys	Lys	Pro	Asn
2075						2080					2085			
Glu	Leu	Ser	Leu	Ala	Leu	Gly	Leu	Lys	Thr	Ile	Ala	Thr	His	Gly
2090						2095					2100			
Ile	Ala	Ala	Ile	Asn	Ser	Val	Pro	Trp	Ser	Lys	Ile	Leu	Ala	Tyr
2105						2110					2115			
Val	Lys	Pro	Phe	Leu	Gly	Gln	Ala	Ala	Ile	Thr	Thr	Ser	Asn	Cys
2120						2125					2130			
Ala	Lys	Arg	Leu	Ala	Gln	Arg	Val	Phe	Asn	Asn	Tyr	Met	Pro	Tyr
2135						2140					2145			
Val	Phe	Thr	Leu	Leu	Phe	Gln	Leu	Cys	Thr	Phe	Thr	Lys	Ser	Thr
2150						2155					2160			
Asn	Ser	Arg	Ile	Arg	Ala	Ser	Leu	Pro	Thr	Thr	Ile	Ala	Lys	Asn
2165						2170					2175			
Ser	Val	Lys	Ser	Val	Ala	Lys	Leu	Cys	Leu	Asp	Ala	Gly	Ile	Asn
2180						2185					2190			
Tyr	Val	Lys	Ser	Pro	Lys	Phe	Ser	Lys	Leu	Phe	Thr	Ile	Ala	Met
2195						2200					2205			
Trp	Leu	Leu	Leu	Leu	Ser	Ile	Cys	Leu	Gly	Ser	Leu	Ile	Cys	Val
2210						2215					2220			
Thr	Ala	Ala	Phe	Gly	Val	Leu	Leu	Ser	Asn	Phe	Gly	Ala	Pro	Ser
2225						2230					2235			
Tyr	Cys	Asn	Gly	Val	Arg	Glu	Leu	Tyr	Leu	Asn	Ser	Ser	Asn	Val
2240						2245					2250			
Thr	Thr	Met	Asp	Phe	Cys	Glu	Gly	Ser	Phe	Pro	Cys	Ser	Ile	Cys
2255						2260					2265			

Leu Ser 2270	Gly Leu Asp Ser 2275	Leu Asp Ser Tyr Pro 2280	Ala Leu Glu Thr
Ile Gln 2285	Val Thr Ile Ser 2290	Ser Tyr Lys Leu Asp 2295	Leu Thr Ile Leu
Gly Leu 2300	Ala Ala Glu Trp 2305	Val Leu Ala Tyr Met 2310	Leu Phe Thr Lys
Phe Phe 2315	Tyr Leu Leu Gly 2320	Leu Ser Ala Ile Met 2325	Gln Val Phe Phe
Gly Tyr 2330	Phe Ala Ser His 2335	Phe Ile Ser Asn Ser 2340	Trp Leu Met Trp
Phe Ile 2345	Ile Ser Ile Val 2350	Gln Met Ala Pro Val 2355	Ser Ala Met Val
Arg Met 2360	Tyr Ile Phe Phe 2365	Ala Ser Phe Tyr Tyr 2370	Ile Trp Lys Ser
Tyr Val 2375	His Ile Met Asp 2380	Gly Cys Thr Ser Ser 2385	Thr Cys Met Met
Cys Tyr 2390	Lys Arg Asn Arg 2395	Ala Thr Arg Val Glu 2400	Cys Thr Thr Ile
Val Asn 2405	Gly Met Lys Arg 2410	Ser Phe Tyr Val Tyr 2415	Ala Asn Gly Gly
Arg Gly 2420	Phe Cys Lys Thr 2425	His Asn Trp Asn Cys 2430	Leu Asn Cys Asp
Thr Phe 2435	Cys Thr Gly Ser 2440	Thr Phe Ile Ser Asp 2445	Glu Val Ala Arg
Asp Leu 2450	Ser Leu Gln Phe 2455	Lys Arg Pro Ile Asn 2460	Pro Thr Asp Gln
Ser Ser 2465	Tyr Ile Val Asp 2470	Ser Val Ala Val Lys 2475	Asn Gly Ala Leu
His Leu 2480	Tyr Phe Asp Lys 2485	Ala Gly Gln Lys Thr 2490	Tyr Glu Arg His

Pro	Leu	Ser	His	Phe	Val	Asn	Leu	Asp	Asn	Leu	Arg	Ala	Asn	Asn
2495						2500					2505			
Thr	Lys	Gly	Ser	Leu	Pro	Ile	Asn	Val	Ile	Val	Phe	Asp	Gly	Lys
2510						2515					2520			
Ser	Lys	Cys	Asp	Glu	Ser	Ala	Ser	Lys	Ser	Ala	Ser	Val	Tyr	Tyr
2525						2530					2535			
Ser	Gln	Leu	Met	Cys	Gln	Pro	Ile	Leu	Leu	Leu	Asp	Gln	Ala	Leu
2540						2545					2550			
Val	Ser	Asp	Val	Gly	Asp	Ser	Thr	Glu	Val	Ser	Val	Lys	Met	Phe
2555						2560					2565			
Asp	Ala	Tyr	Val	Asp	Thr	Phe	Ser	Ala	Thr	Phe	Ser	Val	Pro	Met
2570						2575					2580			
Glu	Lys	Leu	Lys	Ala	Leu	Val	Ala	Thr	Ala	His	Ser	Glu	Leu	Ala
2585						2590					2595			
Lys	Gly	Val	Ala	Leu	Asp	Gly	Val	Leu	Ser	Thr	Phe	Val	Ser	Ala
2600						2605					2610			
Ala	Arg	Gln	Gly	Val	Val	Asp	Thr	Asp	Val	Asp	Thr	Lys	Asp	Val
2615						2620					2625			
Ile	Glu	Cys	Leu	Lys	Leu	Ser	His	His	Ser	Asp	Leu	Glu	Val	Thr
2630						2635					2640			
Gly	Asp	Ser	Cys	Asn	Asn	Phe	Met	Leu	Thr	Tyr	Asn	Lys	Val	Glu
2645						2650					2655			
Asn	Met	Thr	Pro	Arg	Asp	Leu	Gly	Ala	Cys	Ile	Asp	Cys	Asn	Ala
2660						2665					2670			
Arg	His	Ile	Asn	Ala	Gln	Val	Ala	Lys	Ser	His	Asn	Val	Ser	Leu
2675						2680					2685			
Ile	Trp	Asn	Val	Lys	Asp	Tyr	Met	Ser	Leu	Ser	Glu	Gln	Leu	Arg
2690						2695					2700			
Lys	Gln	Ile	Arg	Ser	Ala	Ala	Lys	Lys	Asn	Asn	Ile	Pro	Phe	Arg
2705						2710					2715			
Leu	Thr	Cys	Ala	Thr	Thr	Arg	Gln	Val	Val	Asn	Val	Ile	Thr	Thr
2720						2725					2730			

Lys Ile 2735	Ser Leu Lys Gly Gly 2740	Lys Ile Val Ser Thr 2745	Cys Phe Lys
Leu Met 2750	Leu Lys Ala Thr Leu 2755	Leu Cys Val Leu Ala 2760	Ala Leu Val
Cys Tyr 2765	Ile Val Met Pro Val 2770	His Thr Leu Ser Ile 2775	His Asp Gly
Tyr Thr 2780	Asn Glu Ile Ile Gly 2785	Tyr Lys Ala Ile Gln 2790	Asp Gly Val
Thr Arg 2795	Asp Ile Ile Ser Thr 2800	Asp Asp Cys Phe Ala 2805	Asn Lys His
Ala Gly 2810	Phe Asp Ala Trp Phe 2815	Ser Gln Arg Gly Gly 2820	Ser Tyr Lys
Asn Asp 2825	Lys Ser Cys Pro Val 2830	Val Ala Ala Ile Ile 2835	Thr Arg Glu
Ile Gly 2840	Phe Ile Val Pro Gly 2845	Leu Pro Gly Thr Val 2850	Leu Arg Ala
Ile Asn 2855	Gly Asp Phe Leu His 2860	Phe Leu Pro Arg Val 2865	Phe Ser Ala
Val Gly 2870	Asn Ile Cys Tyr Thr 2875	Pro Ser Lys Leu Ile 2880	Glu Tyr Ser
Asp Phe 2885	Ala Thr Ser Ala Cys 2890	Val Leu Ala Ala Glu 2895	Cys Thr Ile
Phe Lys 2900	Asp Ala Met Gly Lys 2905	Pro Val Pro Tyr Cys 2910	Tyr Asp Thr
Asn Leu 2915	Leu Glu Gly Ser Ile 2920	Ser Tyr Ser Glu Leu 2925	Arg Pro Asp
Thr Arg 2930	Tyr Val Leu Met Asp 2935	Gly Ser Ile Ile Gln 2940	Phe Pro Asn
Thr Tyr 2945	Leu Glu Gly Ser Val 2950	Arg Val Val Thr Thr 2955	Phe Asp Ala

Glu Tyr 2960	Cys Arg His Gly Thr 2965	Cys Glu Arg Ser Glu 2970	Val Gly Ile
Cys Leu 2975	Ser Thr Ser Gly Arg 2980	Trp Val Leu Asn Asn 2985	Glu His Tyr
Arg Ala 2990	Leu Ser Gly Val Phe 2995	Cys Gly Val Asp Ala 3000	Met Asn Leu
Ile Ala 3005	Asn Ile Phe Thr Pro 3010	Leu Val Gln Pro Val 3015	Gly Ala Leu
Asp Val 3020	Ser Ala Ser Val Val 3025	Ala Gly Gly Ile Ile 3030	Ala Ile Leu
Val Thr 3035	Cys Ala Ala Tyr Tyr 3040	Phe Met Lys Phe Arg 3045	Arg Val Phe
Gly Glu 3050	Tyr Asn His Val Val 3055	Ala Ala Asn Ala Leu 3060	Leu Phe Leu
Met Ser 3065	Phe Thr Ile Leu Cys 3070	Leu Val Pro Ala Tyr 3075	Ser Phe Leu
Pro Gly 3080	Val Tyr Ser Val Phe 3085	Tyr Leu Tyr Leu Thr 3090	Phe Tyr Phe
Thr Asn 3095	Asp Val Ser Phe Leu 3100	Ala His Leu Gln Trp 3105	Phe Ala Met
Phe Ser 3110	Pro Ile Val Pro Phe 3115	Trp Ile Thr Ala Ile 3120	Tyr Val Phe
Cys Ile 3125	Ser Leu Lys His Cys 3130	His Trp Phe Phe Asn 3135	Asn Tyr Leu
Arg Lys 3140	Arg Val Met Phe Asn 3145	Gly Val Thr Phe Ser 3150	Thr Phe Glu
Glu Ala 3155	Ala Leu Cys Thr Phe 3160	Leu Leu Asn Lys Glu 3165	Met Tyr Leu
Lys Leu 3170	Arg Ser Glu Thr Leu 3175	Leu Pro Leu Thr Gln 3180	Tyr Asn Arg
Tyr Leu 3185	Ala Leu Tyr Asn Lys 3190	Tyr Lys Tyr Phe Ser 3195	Gly Ala Leu

Asp	Thr	Thr	Ser	Tyr	Arg	Glu	Ala	Ala	Cys	Cys	His	Leu	Ala	Lys
3200						3205					3210			
Ala	Leu	Asn	Asp	Phe	Ser	Asn	Ser	Gly	Ala	Asp	Val	Leu	Tyr	Gln
3215						3220					3225			
Pro	Pro	Gln	Thr	Ser	Ile	Thr	Ser	Ala	Val	Leu	Gln	Ser	Gly	Phe
3230						3235					3240			
Arg	Lys	Met	Ala	Phe	Pro	Ser	Gly	Lys	Val	Glu	Gly	Cys	Met	Val
3245						3250					3255			
Gln	Val	Thr	Cys	Gly	Thr	Thr	Thr	Leu	Asn	Gly	Leu	Trp	Leu	Asp
3260						3265					3270			
Asp	Thr	Val	Tyr	Cys	Pro	Arg	His	Val	Ile	Cys	Thr	Ala	Glu	Asp
3275						3280					3285			
Met	Leu	Asn	Pro	Asn	Tyr	Glu	Asp	Leu	Leu	Ile	Arg	Lys	Ser	Asn
3290						3295					3300			
His	Ser	Phe	Leu	Val	Gln	Ala	Gly	Asn	Val	Gln	Leu	Arg	Val	Ile
3305						3310					3315			
Gly	His	Ser	Met	Gln	Asn	Cys	Leu	Leu	Arg	Leu	Lys	Val	Asp	Thr
3320						3325					3330			
Ser	Asn	Pro	Lys	Thr	Pro	Lys	Tyr	Lys	Phe	Val	Arg	Ile	Gln	Pro
3335						3340					3345			
Gly	Gln	Thr	Phe	Ser	Val	Leu	Ala	Cys	Tyr	Asn	Gly	Ser	Pro	Ser
3350						3355					3360			
Gly	Val	Tyr	Gln	Cys	Ala	Met	Arg	Pro	Asn	His	Thr	Ile	Lys	Gly
3365						3370					3375			
Ser	Phe	Leu	Asn	Gly	Ser	Cys	Gly	Ser	Val	Gly	Phe	Asn	Ile	Asp
3380						3385					3390			
Tyr	Asp	Cys	Val	Ser	Phe	Cys	Tyr	Met	His	His	Met	Glu	Leu	Pro
3395						3400					3405			
Thr	Gly	Val	His	Ala	Gly	Thr	Asp	Leu	Glu	Gly	Lys	Phe	Tyr	Gly
3410						3415					3420			

Pro Phe	Val Asp Arg Gln Thr	Ala Gln Ala Ala Gly	Thr Asp Thr
3425	3430	3435	
Thr Ile	Thr Leu Asn Val Leu	Ala Trp Leu Tyr Ala	Ala Val Ile
3440	3445	3450	
Asn Gly	Asp Arg Trp Phe Leu	Asn Arg Phe Thr Thr	Thr Leu Asn
3455	3460	3465	
Asp Phe	Asn Leu Val Ala Met	Lys Tyr Asn Tyr Glu	Pro Leu Thr
3470	3475	3480	
Gln Asp	His Val Asp Ile Leu	Gly Pro Leu Ser Ala	Gln Thr Gly
3485	3490	3495	
Ile Ala	Val Leu Asp Met Cys	Ala Ala Leu Lys Glu	Leu Leu Gln
3500	3505	3510	
Asn Gly	Met Asn Gly Arg Thr	Ile Leu Gly Ser Thr	Ile Leu Glu
3515	3520	3525	
Asp Glu	Phe Thr Pro Phe Asp	Val Val Arg Gln Cys	Ser Gly Val
3530	3535	3540	
Thr Phe	Gln Gly Lys Phe Lys	Lys Ile Val Lys Gly	Thr His His
3545	3550	3555	
Trp Met	Leu Leu Thr Phe Leu	Thr Ser Leu Leu Ile	Leu Val Gln
3560	3565	3570	
Ser Thr	Gln Trp Ser Leu Phe	Phe Phe Val Tyr Glu	Asn Ala Phe
3575	3580	3585	
Leu Pro	Phe Thr Leu Gly Ile	Met Ala Ile Ala Ala	Cys Ala Met
3590	3595	3600	
Leu Leu	Val Lys His Lys His	Ala Phe Leu Cys Leu	Phe Leu Leu
3605	3610	3615	
Pro Ser	Leu Ala Thr Val Ala	Tyr Phe Asn Met Val	Tyr Met Pro
3620	3625	3630	
Ala Ser	Trp Val Met Arg Ile	Met Thr Trp Leu Glu	Leu Ala Asp
3635	3640	3645	
Thr Ser	Leu Ser Gly Tyr Arg	Leu Lys Asp Cys Val	Met Tyr Ala
3650	3655	3660	

Ser	Ala	Leu	Val	Leu	Leu	Ile	Leu	Met	Thr	Ala	Arg	Thr	Val	Tyr
	3665					3670					3675			
Asp	Asp	Ala	Ala	Arg	Arg	Val	Trp	Thr	Leu	Met	Asn	Val	Ile	Thr
	3680					3685					3690			
Leu	Val	Tyr	Lys	Val	Tyr	Tyr	Gly	Asn	Ala	Leu	Asp	Gln	Ala	Ile
	3695					3700					3705			
Ser	Met	Trp	Ala	Leu	Val	Ile	Ser	Val	Thr	Ser	Asn	Tyr	Ser	Gly
	3710					3715					3720			
Val	Val	Thr	Thr	Ile	Met	Phe	Leu	Ala	Arg	Ala	Ile	Val	Phe	Val
	3725					3730					3735			
Cys	Val	Glu	Tyr	Tyr	Pro	Leu	Leu	Phe	Ile	Thr	Gly	Asn	Thr	Leu
	3740					3745					3750			
Gln	Cys	Ile	Met	Leu	Val	Tyr	Cys	Phe	Leu	Gly	Tyr	Cys	Cys	Cys
	3755					3760					3765			
Cys	Tyr	Phe	Gly	Leu	Phe	Cys	Leu	Leu	Asn	Arg	Tyr	Phe	Arg	Leu
	3770					3775					3780			
Thr	Leu	Gly	Val	Tyr	Asp	Tyr	Leu	Val	Ser	Thr	Gln	Glu	Phe	Arg
	3785					3790					3795			
Tyr	Met	Asn	Ser	Gln	Gly	Leu	Leu	Pro	Pro	Lys	Ser	Ser	Ile	Asp
	3800					3805					3810			
Ala	Phe	Lys	Leu	Asn	Ile	Lys	Leu	Leu	Gly	Ile	Gly	Gly	Lys	Pro
	3815					3820					3825			
Cys	Ile	Lys	Val	Ala	Thr	Val	Gln	Ser	Lys	Met	Ser	Asp	Val	Lys
	3830					3835					3840			
Cys	Thr	Ser	Val	Val	Leu	Leu	Ser	Val	Leu	Gln	Gln	Leu	Arg	Val
	3845					3850					3855			
Glu	Ser	Ser	Ser	Lys	Leu	Trp	Ala	Gln	Cys	Val	Gln	Leu	His	Asn
	3860					3865					3870			
Asp	Ile	Leu	Leu	Ala	Lys	Asp	Thr	Thr	Glu	Ala	Phe	Glu	Lys	Met
	3875					3880					3885			

Val 3890	Ser	Leu	Leu	Ser	Val	Leu 3895	Leu	Ser	Met	Gln	Gly 3900	Ala	Val	Asp
Ile 3905	Asn	Arg	Leu	Cys	Glu	Glu 3910	Met	Leu	Asp	Asn	Arg 3915	Ala	Thr	Leu
Gln 3920	Ala	Ile	Ala	Ser	Glu	Phe 3925	Ser	Ser	Leu	Pro	Ser 3930	Tyr	Ala	Ala
Tyr 3935	Ala	Thr	Ala	Gln	Glu	Ala 3940	Tyr	Glu	Gln	Ala	Val 3945	Ala	Asn	Gly
Asp 3950	Ser	Glu	Val	Val	Leu	Lys 3955	Lys	Leu	Lys	Lys	Ser 3960	Leu	Asn	Val
Ala 3965	Lys	Ser	Glu	Phe	Asp	Arg 3970	Asp	Ala	Ala	Met	Gln 3975	Arg	Lys	Leu
Glu 3980	Lys	Met	Ala	Asp	Gln	Ala 3985	Met	Thr	Gln	Met	Tyr 3990	Lys	Gln	Ala
Arg 3995	Ser	Glu	Asp	Lys	Arg	Ala 4000	Lys	Val	Thr	Ser	Ala 4005	Met	Gln	Thr
Met 4010	Leu	Phe	Thr	Met	Leu	Arg 4015	Lys	Leu	Asp	Asn	Asp 4020	Ala	Leu	Asn
Asn 4025	Ile	Ile	Asn	Asn	Ala	Arg 4030	Asp	Gly	Cys	Val	Pro 4035	Leu	Asn	Ile
Ile 4040	Pro	Leu	Thr	Thr	Ala	Ala 4045	Lys	Leu	Met	Val	Val 4050	Val	Pro	Asp
Tyr 4055	Gly	Thr	Tyr	Lys	Asn	Thr 4060	Cys	Asp	Gly	Asn	Thr 4065	Phe	Thr	Tyr
Ala 4070	Ser	Ala	Leu	Trp	Glu	Ile 4075	Gln	Gln	Val	Val	Asp 4080	Ala	Asp	Ser
Lys 4085	Ile	Val	Gln	Leu	Ser	Glu 4090	Ile	Asn	Met	Asp	Asn 4095	Ser	Pro	Asn
Leu 4100	Ala	Trp	Pro	Leu	Ile	Val 4105	Thr	Ala	Leu	Arg	Ala 4110	Asn	Ser	Ala
Val 4115	Lys	Leu	Gln	Asn	Asn	Glu 4120	Leu	Ser	Pro	Val	Ala 4125	Leu	Arg	Gln

Met	Ser	Cys	Ala	Ala	Gly	Thr	Thr	Gln	Thr	Ala	Cys	Thr	Asp	Asp
4130						4135					4140			
Asn	Ala	Leu	Ala	Tyr	Tyr	Asn	Asn	Ser	Lys	Gly	Gly	Arg	Phe	Val
4145						4150					4155			
Leu	Ala	Leu	Leu	Ser	Asp	His	Gln	Asp	Leu	Lys	Trp	Ala	Arg	Phe
4160						4165					4170			
Pro	Lys	Ser	Asp	Gly	Thr	Gly	Thr	Ile	Tyr	Thr	Glu	Leu	Glu	Pro
4175						4180					4185			
Pro	Cys	Arg	Phe	Val	Thr	Asp	Thr	Pro	Lys	Gly	Pro	Lys	Val	Lys
4190						4195					4200			
Tyr	Leu	Tyr	Phe	Ile	Lys	Gly	Leu	Asn	Asn	Leu	Asn	Arg	Gly	Met
4205						4210					4215			
Val	Leu	Gly	Ser	Leu	Ala	Ala	Thr	Val	Arg	Leu	Gln	Ala	Gly	Asn
4220						4225					4230			
Ala	Thr	Glu	Val	Pro	Ala	Asn	Ser	Thr	Val	Leu	Ser	Phe	Cys	Ala
4235						4240					4245			
Phe	Ala	Val	Asp	Pro	Ala	Lys	Ala	Tyr	Lys	Asp	Tyr	Leu	Ala	Ser
4250						4255					4260			
Gly	Gly	Gln	Pro	Ile	Thr	Asn	Cys	Val	Lys	Met	Leu	Cys	Thr	His
4265						4270					4275			
Thr	Gly	Thr	Gly	Gln	Ala	Ile	Thr	Val	Thr	Pro	Glu	Ala	Asn	Met
4280						4285					4290			
Asp	Gln	Glu	Ser	Phe	Gly	Gly	Ala	Ser	Cys	Cys	Leu	Tyr	Cys	Arg
4295						4300					4305			
Cys	His	Ile	Asp	His	Pro	Asn	Pro	Lys	Gly	Phe	Cys	Asp	Leu	Lys
4310						4315					4320			
Gly	Lys	Tyr	Val	Gln	Ile	Pro	Thr	Thr	Cys	Ala	Asn	Asp	Pro	Val
4325						4330					4335			
Gly	Phe	Thr	Leu	Arg	Asn	Thr	Val	Cys	Thr	Val	Cys	Gly	Met	Trp
4340						4345					4350			

Lys	Gly	Tyr	Gly	Cys	Ser	Cys	Asp	Gln	Leu	Arg	Glu	Pro	Leu	Met
4355						4360					4365			
Gln	Ser	Ala	Asp	Ala	Ser	Thr	Phe	Phe	Lys	Arg	Val	Cys	Gly	Val
4370						4375					4380			
Ser	Ala	Ala	Arg	Leu	Thr	Pro	Cys	Gly	Thr	Gly	Thr	Ser	Thr	Asp
4385						4390					4395			
Val	Val	Tyr	Arg	Ala	Phe	Asp	Ile	Tyr	Asn	Glu	Lys	Val	Ala	Gly
4400						4405					4410			
Phe	Ala	Lys	Phe	Leu	Lys	Thr	Asn	Cys	Cys	Arg	Phe	Gln	Glu	Lys
4415						4420					4425			
Asp	Glu	Glu	Gly	Asn	Leu	Leu	Asp	Ser	Tyr	Phe	Val	Val	Lys	Arg
4430						4435					4440			
His	Thr	Met	Ser	Asn	Tyr	Gln	His	Glu	Glu	Thr	Ile	Tyr	Asn	Leu
4445						4450					4455			
Val	Lys	Asp	Cys	Pro	Ala	Val	Ala	Val	His	Asp	Phe	Phe	Lys	Phe
4460						4465					4470			
Arg	Val	Asp	Gly	Asp	Met	Val	Pro	His	Ile	Ser	Arg	Gln	Arg	Leu
4475						4480					4485			
Thr	Lys	Tyr	Thr	Met	Ala	Asp	Leu	Val	Tyr	Ala	Leu	Arg	His	Phe
4490						4495					4500			
Asp	Glu	Gly	Asn	Cys	Asp	Thr	Leu	Lys	Glu	Ile	Leu	Val	Thr	Tyr
4505						4510					4515			
Asn	Cys	Cys	Asp	Asp	Asp	Tyr	Phe	Asn	Lys	Lys	Asp	Trp	Tyr	Asp
4520						4525					4530			
Phe	Val	Glu	Asn	Pro	Asp	Ile	Leu	Arg	Val	Tyr	Ala	Asn	Leu	Gly
4535						4540					4545			
Glu	Arg	Val	Arg	Gln	Ser	Leu	Leu	Lys	Thr	Val	Gln	Phe	Cys	Asp
4550						4555					4560			
Ala	Met	Arg	Asp	Ala	Gly	Ile	Val	Gly	Val	Leu	Thr	Leu	Asp	Asn
4565						4570					4575			
Gln	Asp	Leu	Asn	Gly	Asn	Trp	Tyr	Asp	Phe	Gly	Asp	Phe	Val	Gln
4580						4585					4590			

Val	Ala	Pro	Gly	Cys	Gly	Val	Pro	Ile	Val	Asp	Ser	Tyr	Tyr	Ser
4595						4600					4605			
Leu	Leu	Met	Pro	Ile	Leu	Thr	Leu	Thr	Arg	Ala	Leu	Ala	Ala	Glu
4610						4615					4620			
Ser	His	Met	Asp	Ala	Asp	Leu	Ala	Lys	Pro	Leu	Ile	Lys	Trp	Asp
4625						4630					4635			
Leu	Leu	Lys	Tyr	Asp	Phe	Thr	Glu	Glu	Arg	Leu	Cys	Leu	Phe	Asp
4640						4645					4650			
Arg	Tyr	Phe	Lys	Tyr	Trp	Asp	Gln	Thr	Tyr	His	Pro	Asn	Cys	Ile
4655						4660					4665			
Asn	Cys	Leu	Asp	Asp	Arg	Cys	Ile	Leu	His	Cys	Ala	Asn	Phe	Asn
4670						4675					4680			
Val	Leu	Phe	Ser	Thr	Val	Phe	Pro	Pro	Thr	Ser	Phe	Gly	Pro	Leu
4685						4690					4695			
Val	Arg	Lys	Ile	Phe	Val	Asp	Gly	Val	Pro	Phe	Val	Val	Ser	Thr
4700						4705					4710			
Gly	Tyr	His	Phe	Arg	Glu	Leu	Gly	Val	Val	His	Asn	Gln	Asp	Val
4715						4720					4725			
Asn	Leu	His	Ser	Ser	Arg	Leu	Ser	Phe	Lys	Glu	Leu	Leu	Val	Tyr
4730						4735					4740			
Ala	Ala	Asp	Pro	Ala	Met	His	Ala	Ala	Ser	Gly	Asn	Leu	Leu	Leu
4745						4750					4755			
Asp	Lys	Arg	Thr	Thr	Cys	Phe	Ser	Val	Ala	Ala	Leu	Thr	Asn	Asn
4760						4765					4770			
Val	Ala	Phe	Gln	Thr	Val	Lys	Pro	Gly	Asn	Phe	Asn	Lys	Asp	Phe
4775						4780					4785			
Tyr	Asp	Phe	Ala	Val	Ser	Lys	Gly	Phe	Phe	Lys	Glu	Gly	Ser	Ser
4790						4795					4800			
Val	Glu	Leu	Lys	His	Phe	Phe	Phe	Ala	Gln	Asp	Gly	Asn	Ala	Ala
4805						4810					4815			

Ile	Ser	Asp	Tyr	Asp	Tyr	Tyr	Arg	Tyr	Asn	Leu	Pro	Thr	Met	Cys
4820						4825					4830			
Asp	Ile	Arg	Gln	Leu	Leu	Phe	Val	Val	Glu	Val	Val	Asp	Lys	Tyr
4835						4840					4845			
Phe	Asp	Cys	Tyr	Asp	Gly	Gly	Cys	Ile	Asn	Ala	Asn	Gln	Val	Ile
4850						4855					4860			
Val	Asn	Asn	Leu	Asp	Lys	Ser	Ala	Gly	Phe	Pro	Phe	Asn	Lys	Trp
4865						4870					4875			
Gly	Lys	Ala	Arg	Leu	Tyr	Tyr	Asp	Ser	Met	Ser	Tyr	Glu	Asp	Gln
4880						4885					4890			
Asp	Ala	Leu	Phe	Ala	Tyr	Thr	Lys	Arg	Asn	Val	Ile	Pro	Thr	Ile
4895						4900					4905			
Thr	Gln	Met	Asn	Leu	Lys	Tyr	Ala	Ile	Ser	Ala	Lys	Asn	Arg	Ala
4910						4915					4920			
Arg	Thr	Val	Ala	Gly	Val	Ser	Ile	Cys	Ser	Thr	Met	Thr	Asn	Arg
4925						4930					4935			
Gln	Phe	His	Gln	Lys	Leu	Leu	Lys	Ser	Ile	Ala	Ala	Thr	Arg	Gly
4940						4945					4950			
Ala	Thr	Val	Val	Ile	Gly	Thr	Ser	Lys	Phe	Tyr	Gly	Gly	Trp	His
4955						4960					4965			
Asn	Met	Leu	Lys	Thr	Val	Tyr	Ser	Asp	Val	Glu	Thr	Pro	His	Leu
4970						4975					4980			
Met	Gly	Trp	Asp	Tyr	Pro	Lys	Cys	Asp	Arg	Ala	Met	Pro	Asn	Met
4985						4990					4995			
Leu	Arg	Ile	Met	Ala	Ser	Leu	Val	Leu	Ala	Arg	Lys	His	Asn	Thr
5000						5005					5010			
Cys	Cys	Asn	Leu	Ser	His	Arg	Phe	Tyr	Arg	Leu	Ala	Asn	Glu	Cys
5015						5020					5025			
Ala	Gln	Val	Leu	Ser	Glu	Met	Val	Met	Cys	Gly	Gly	Ser	Leu	Tyr
5030						5035					5040			
Val	Lys	Pro	Gly	Gly	Thr	Ser	Ser	Gly	Asp	Ala	Thr	Thr	Ala	Tyr
5045						5050					5055			

Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val	5060	5065	5070
Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr	5075	5080	5085
Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn	5090	5095	5100
Arg Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu	5105	5110	5115
Arg Lys His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val	5120	5125	5130
Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile	5135	5140	5145
Lys Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met	5150	5155	5160
Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro	5165	5170	5175
His Glu Phe Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp	5180	5185	5190
Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly	5195	5200	5205
Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly Thr Leu	5210	5215	5220
Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro Leu	5225	5230	5235
Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr	5240	5245	5250
Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly His Met	5255	5260	5265
Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg	5270	5275	5280

Tyr Trp 5285	Glu Pro Glu Phe	Tyr 5290	Glu Ala Met Tyr Thr 5295	Pro His Thr
Val Leu 5300	Gln Ala Val Gly	Ala 5305	Cys Val Leu Cys Asn 5310	Ser Gln Thr
Ser Leu 5315	Arg Cys Gly Ala	Cys 5320	Ile Arg Arg Pro Phe 5325	Leu Cys Cys
Lys Cys 5330	Cys Tyr Asp His	Val 5335	Ile Ser Thr Ser His 5340	Lys Leu Val
Leu Ser 5345	Val Asn Pro Tyr	Val 5350	Cys Asn Ala Pro Gly 5355	Cys Asp Val
Thr Asp 5360	Val Thr Gln Leu	Tyr 5365	Leu Gly Gly Met Ser 5370	Tyr Tyr Cys
Lys Ser 5375	His Lys Pro Pro	Ile 5380	Ser Phe Pro Leu Cys 5385	Ala Asn Gly
Gln Val 5390	Phe Gly Leu Tyr	Lys 5395	Asn Thr Cys Val Gly 5400	Ser Asp Asn
Val Thr 5405	Asp Phe Asn Ala	Ile 5410	Ala Thr Cys Asp Trp 5415	Thr Asn Ala
Gly Asp 5420	Tyr Ile Leu Ala	Asn 5425	Thr Cys Thr Glu Arg 5430	Leu Lys Leu
Phe Ala 5435	Ala Glu Thr Leu	Lys 5440	Ala Thr Glu Glu Thr 5445	Phe Lys Leu
Ser Tyr 5450	Gly Ile Ala Thr	Val 5455	Arg Glu Val Leu Ser 5460	Asp Arg Glu
Leu His 5465	Leu Ser Trp Glu	Val 5470	Gly Lys Pro Arg Pro 5475	Pro Leu Asn
Arg Asn 5480	Tyr Val Phe Thr	Gly 5485	Tyr Arg Val Thr Lys 5490	Asn Ser Lys
Val Gln 5495	Ile Gly Glu Tyr	Thr 5500	Phe Glu Lys Gly Asp 5505	Tyr Gly Asp
Ala Val 5510	Val Tyr Arg Gly	Thr 5515	Thr Thr Tyr Lys Leu 5520	Asn Val Gly

Asp	Tyr	Phe	Val	Leu	Thr	Ser	His	Thr	Val	Met	Pro	Leu	Ser	Ala
5525						5530					5535			
Pro	Thr	Leu	Val	Pro	Gln	Glu	His	Tyr	Val	Arg	Ile	Thr	Gly	Leu
5540						5545					5550			
Tyr	Pro	Thr	Leu	Asn	Ile	Ser	Asp	Glu	Phe	Ser	Ser	Asn	Val	Ala
5555						5560					5565			
Asn	Tyr	Gln	Lys	Val	Gly	Met	Gln	Lys	Tyr	Ser	Thr	Leu	Gln	Gly
5570						5575					5580			
Pro	Pro	Gly	Thr	Gly	Lys	Ser	His	Phe	Ala	Ile	Gly	Leu	Ala	Leu
5585						5590					5595			
Tyr	Tyr	Pro	Ser	Ala	Arg	Ile	Val	Tyr	Thr	Ala	Cys	Ser	His	Ala
5600						5605					5610			
Ala	Val	Asp	Ala	Leu	Cys	Glu	Lys	Ala	Leu	Lys	Tyr	Leu	Pro	Ile
5615						5620					5625			
Asp	Lys	Cys	Ser	Arg	Ile	Ile	Pro	Ala	Arg	Ala	Arg	Val	Glu	Cys
5630						5635					5640			
Phe	Asp	Lys	Phe	Lys	Val	Asn	Ser	Thr	Leu	Glu	Gln	Tyr	Val	Phe
5645						5650					5655			
Cys	Thr	Val	Asn	Ala	Leu	Pro	Glu	Thr	Thr	Ala	Asp	Ile	Val	Val
5660						5665					5670			
Phe	Asp	Glu	Ile	Ser	Met	Ala	Thr	Asn	Tyr	Asp	Leu	Ser	Val	Val
5675						5680					5685			
Asn	Ala	Arg	Leu	Arg	Ala	Lys	His	Tyr	Val	Tyr	Ile	Gly	Asp	Pro
5690						5695					5700			
Ala	Gln	Leu	Pro	Ala	Pro	Arg	Thr	Leu	Leu	Thr	Lys	Gly	Thr	Leu
5705						5710					5715			
Glu	Pro	Glu	Tyr	Phe	Asn	Ser	Val	Cys	Arg	Leu	Met	Lys	Thr	Ile
5720						5725					5730			
Gly	Pro	Asp	Met	Phe	Leu	Gly	Thr	Cys	Arg	Arg	Cys	Pro	Ala	Glu
5735						5740					5745			

Ile Val 5750	Asp Thr Val Ser 5755	Ala Leu Val Tyr Asp 5760	Asn Lys Leu Lys
Ala His 5765	Lys Asp Lys Ser 5770	Gln Cys Phe Lys 5775	Met Phe Tyr Lys
Gly Val 5780	Ile Thr His Asp 5785	Val Ser Ser Ala Ile 5790	Asn Arg Pro Gln
Ile Gly 5795	Val Val Arg Glu 5800	Phe Leu Thr Arg Asn 5805	Pro Ala Trp Arg
Lys Ala 5810	Val Phe Ile Ser 5815	Pro Tyr Asn Ser Gln 5820	Asn Ala Val Ala
Ser Lys 5825	Ile Leu Gly Leu 5830	Pro Thr Gln Thr Val 5835	Asp Ser Ser Gln
Gly Ser 5840	Glu Tyr Asp Tyr 5845	Val Ile Phe Thr Gln 5850	Thr Thr Glu Thr
Ala His 5855	Ser Cys Asn Val 5860	Asn Arg Phe Asn Val 5865	Ala Ile Thr Arg
Ala Lys 5870	Ile Gly Ile Leu 5875	Cys Ile Met Ser Asp 5880	Arg Asp Leu Tyr
Asp Lys 5885	Leu Gln Phe Thr 5890	Ser Leu Glu Ile Pro 5895	Arg Arg Asn Val
Ala Thr 5900	Leu Gln Ala Glu 5905	Asn Val Thr Gly Leu 5910	Phe Lys Asp Cys
Ser Lys 5915	Ile Ile Thr Gly 5920	Leu His Pro Thr Gln 5925	Ala Pro Thr His
Leu Ser 5930	Val Asp Ile Lys 5935	Phe Lys Thr Glu Gly 5940	Leu Cys Val Asp
Ile Pro 5945	Gly Ile Pro Lys 5950	Asp Met Thr Tyr Arg 5955	Arg Leu Ile Ser
Met Met 5960	Gly Phe Lys Met 5965	Asn Tyr Gln Val Asn 5970	Gly Tyr Pro Asn
Met Phe 5975	Ile Thr Arg Glu 5980	Glu Ala Ile Arg His 5985	Val Arg Ala Trp

Ile Gly 5990	Phe Asp Val Glu Gly 5995	Cys His Ala Thr Arg 6000	Asp Ala Val
Gly Thr 6005	Asn Leu Pro Leu Gln 6010	Leu Gly Phe Ser Thr 6015	Gly Val Asn
Leu Val 6020	Ala Val Pro Thr Gly 6025	Tyr Val Asp Thr Glu 6030	Asn Asn Thr
Glu Phe 6035	Thr Arg Val Asn Ala 6040	Lys Pro Pro Pro Gly 6045	Asp Gln Phe
Lys His 6050	Leu Ile Pro Leu Met 6055	Tyr Lys Gly Leu Pro 6060	Trp Asn Val
Val Arg 6065	Ile Lys Ile Val Gln 6070	Met Leu Ser Asp Thr 6075	Leu Lys Gly
Leu Ser 6080	Asp Arg Val Val Phe 6085	Val Leu Trp Ala His 6090	Gly Phe Glu
Leu Thr 6095	Ser Met Lys Tyr Phe 6100	Val Lys Ile Gly Pro 6105	Glu Arg Thr
Cys Cys 6110	Leu Cys Asp Lys Arg 6115	Ala Thr Cys Phe Ser 6120	Thr Ser Ser
Asp Thr 6125	Tyr Ala Cys Trp Asn 6130	His Ser Val Gly Phe 6135	Asp Tyr Val
Tyr Asn 6140	Pro Phe Met Ile Asp 6145	Val Gln Gln Trp Gly 6150	Phe Thr Gly
Asn Leu 6155	Gln Ser Asn His Asp 6160	Gln His Cys Gln Val 6165	His Gly Asn
Ala His 6170	Val Ala Ser Cys Asp 6175	Ala Ile Met Thr Arg 6180	Cys Leu Ala
Val His 6185	Glu Cys Phe Val Lys 6190	Arg Val Asp Trp Ser 6195	Val Glu Tyr
Pro Ile 6200	Ile Gly Asp Glu Leu 6205	Arg Val Asn Ser Ala 6210	Cys Arg Lys

Val	Gln	His	Met	Val	Val	Lys	Ser	Ala	Leu	Leu	Ala	Asp	Lys	Phe
6215						6220					6225			
Pro	Val	Leu	His	Asp	Ile	Gly	Asn	Pro	Lys	Ala	Ile	Lys	Cys	Val
6230						6235					6240			
Pro	Gln	Ala	Glu	Val	Glu	Trp	Lys	Phe	Tyr	Asp	Ala	Gln	Pro	Cys
6245						6250					6255			
Ser	Asp	Lys	Ala	Tyr	Lys	Ile	Glu	Glu	Leu	Phe	Tyr	Ser	Tyr	Ala
6260						6265					6270			
Thr	His	His	Asp	Lys	Phe	Thr	Asp	Gly	Val	Cys	Leu	Phe	Trp	Asn
6275						6280					6285			
Cys	Asn	Val	Asp	Arg	Tyr	Pro	Ala	Asn	Ala	Ile	Val	Cys	Arg	Phe
6290						6295					6300			
Asp	Thr	Arg	Val	Leu	Ser	Asn	Leu	Asn	Leu	Pro	Gly	Cys	Asp	Gly
6305						6310					6315			
Gly	Ser	Leu	Tyr	Val	Asn	Lys	His	Ala	Phe	His	Thr	Pro	Ala	Phe
6320						6325					6330			
Asp	Lys	Ser	Ala	Phe	Thr	Asn	Leu	Lys	Gln	Leu	Pro	Phe	Phe	Tyr
6335						6340					6345			
Tyr	Ser	Asp	Ser	Pro	Cys	Glu	Ser	His	Gly	Lys	Gln	Val	Val	Ser
6350						6355					6360			
Asp	Ile	Asp	Tyr	Val	Pro	Leu	Lys	Ser	Ala	Thr	Cys	Ile	Thr	Arg
6365						6370					6375			
Cys	Asn	Leu	Gly	Gly	Ala	Val	Cys	Arg	His	His	Ala	Asn	Glu	Tyr
6380						6385					6390			
Arg	Gln	Tyr	Leu	Asp	Ala	Tyr	Asn	Met	Met	Ile	Ser	Ala	Gly	Phe
6395						6400					6405			
Ser	Leu	Trp	Ile	Tyr	Lys	Gln	Phe	Asp	Thr	Tyr	Asn	Leu	Trp	Asn
6410						6415					6420			
Thr	Phe	Thr	Arg	Leu	Gln	Ser	Leu	Glu	Asn	Val	Ala	Tyr	Asn	Val
6425						6430					6435			
Val	Asn	Lys	Gly	His	Phe	Asp	Gly	His	Ala	Gly	Glu	Ala	Pro	Val
6440						6445					6450			

Ser	Ile	Ile	Asn	Asn	Ala	Val	Tyr	Thr	Lys	Val	Asp	Gly	Ile	Asp
6455						6460					6465			
Val	Glu	Ile	Phe	Glu	Asn	Lys	Thr	Thr	Leu	Pro	Val	Asn	Val	Ala
6470						6475					6480			
Phe	Glu	Leu	Trp	Ala	Lys	Arg	Asn	Ile	Lys	Pro	Val	Pro	Glu	Ile
6485						6490					6495			
Lys	Ile	Leu	Asn	Asn	Leu	Gly	Val	Asp	Ile	Ala	Ala	Asn	Thr	Val
6500						6505					6510			
Ile	Trp	Asp	Tyr	Lys	Arg	Glu	Ala	Pro	Ala	His	Val	Ser	Thr	Ile
6515						6520					6525			
Gly	Val	Cys	Thr	Met	Thr	Asp	Ile	Ala	Lys	Lys	Pro	Thr	Glu	Ser
6530						6535					6540			
Ala	Cys	Ser	Ser	Leu	Thr	Val	Leu	Phe	Asp	Gly	Arg	Val	Glu	Gly
6545						6550					6555			
Gln	Val	Asp	Leu	Phe	Arg	Asn	Ala	Arg	Asn	Gly	Val	Leu	Ile	Thr
6560						6565					6570			
Glu	Gly	Ser	Val	Lys	Gly	Leu	Thr	Pro	Ser	Lys	Gly	Pro	Ala	Gln
6575						6580					6585			
Ala	Ser	Val	Asn	Gly	Val	Thr	Leu	Ile	Gly	Glu	Ser	Val	Lys	Thr
6590						6595					6600			
Gln	Phe	Asn	Tyr	Phe	Lys	Lys	Val	Asp	Gly	Ile	Ile	Gln	Gln	Leu
6605						6610					6615			
Pro	Glu	Thr	Tyr	Phe	Thr	Gln	Ser	Arg	Asp	Leu	Glu	Asp	Phe	Lys
6620						6625					6630			
Pro	Arg	Ser	Gln	Met	Glu	Thr	Asp	Phe	Leu	Glu	Leu	Ala	Met	Asp
6635						6640					6645			
Glu	Phe	Ile	Gln	Arg	Tyr	Lys	Leu	Glu	Gly	Tyr	Ala	Phe	Glu	His
6650						6655					6660			
Ile	Val	Tyr	Gly	Asp	Phe	Ser	His	Gly	Gln	Leu	Gly	Gly	Leu	His
6665						6670					6675			

Leu Met 6680	Ile Gly	Leu Ala	Lys 6685	Arg Ser	Gln Asp	Ser 6690	Pro Leu	Lys
Leu Glu 6695	Asp Phe	Ile Pro	Met 6700	Asp Ser	Thr Val	Lys 6705	Asn Tyr	Phe
Ile Thr 6710	Asp Ala	Gln Thr	Gly 6715	Ser Ser	Lys Cys	Val 6720	Cys Ser	Val
Ile Asp 6725	Leu Leu	Leu Asp	Asp 6730	Phe Val	Glu Ile	Ile 6735	Lys Ser	Gln
Asp Leu 6740	Ser Val	Ile Ser	Lys 6745	Val Val	Lys Val	Thr 6750	Ile Asp	Tyr
Ala Glu 6755	Ile Ser	Phe Met	Leu 6760	Trp Cys	Lys Asp	Gly 6765	His Val	Glu
Thr Phe 6770	Tyr Pro	Lys Leu	Gln 6775	Ala Ser	Gln Ala	Trp 6780	Gln Pro	Gly
Val Ala 6785	Met Pro	Asn Leu	Tyr 6790	Lys Met	Gln Arg	Met 6795	Leu Leu	Glu
Lys Cys 6800	Asp Leu	Gln Asn	Tyr 6805	Gly Glu	Asn Ala	Val 6810	Ile Pro	Lys
Gly Ile 6815	Met Met	Asn Val	Ala 6820	Lys Tyr	Thr Gln	Leu 6825	Cys Gln	Tyr
Leu Asn 6830	Thr Leu	Thr Leu	Ala 6835	Val Pro	Tyr Asn	Met 6840	Arg Val	Ile
His Phe 6845	Gly Ala	Gly Ser	Asp 6850	Lys Gly	Val Ala	Pro 6855	Gly Thr	Ala
Val Leu 6860	Arg Gln	Trp Leu	Pro 6865	Thr Gly	Thr Leu	Leu 6870	Val Asp	Ser
Asp Leu 6875	Asn Asp	Phe Val	Ser 6880	Asp Ala	Asp Ser	Thr 6885	Leu Ile	Gly
Asp Cys 6890	Ala Thr	Val His	Thr 6895	Ala Asn	Lys Trp	Asp 6900	Leu Ile	Ile
Ser Asp 6905	Met Tyr	Asp Pro	Arg 6910	Thr Lys	His Val	Thr 6915	Lys Glu	Asn

Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile Lys
6920 6925 6930

Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu
6935 6940 6945

His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe Ser
6950 6955 6960

Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu
6965 6970 6975

Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln
6980 6985 6990

Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn
6995 7000 7005

Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser
7010 7015 7020

Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys
7025 7030 7035

Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly
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Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp
7055 7060 7065

Ile Leu Val Asn Asn
7070

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<213> SARS-CoV Urbani

<400> 28

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Thr Ser Thr Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys
20 25 30

Val Ala Gly Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln
35 40 45

Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val Lys
 50 55 60
 Arg His Thr Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu
 65 70 75 80
 Val Lys Asp Cys Pro Ala Val Ala Val His Asp Phe Phe Lys Phe Arg
 85 90 95
 Val Asp Gly Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys
 100 105 110
 Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly
 115 120 125
 Asn Cys Asp Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp
 130 135 140
 Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro
 145 150 155 160
 Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser
 165 170 175
 Leu Leu Lys Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile
 180 185 190
 Val Gly Val Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr
 195 200 205
 Asp Phe Gly Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile
 210 215 220
 Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg
 225 230 235 240
 Ala Leu Ala Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro Leu
 245 250 255
 Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys
 260 265 270
 Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn
 275 280 285

Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn Phe
 290 295 300

Asn Val Leu Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro Leu
 305 310 315 320

Val Arg Lys Ile Phe Val Asp Gly Val Pro Phe Val Val Ser Thr Gly
 325 330 335

Tyr His Phe Arg Glu Leu Gly Val Val His Asn Gln Asp Val Asn Leu
 340 345 350

His Ser Ser Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp
 355 360 365

Pro Ala Met His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr
 370 375 380

Thr Cys Phe Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln Thr
 385 390 395 400

Val Lys Pro Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser
 405 410 415

Lys Gly Phe Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe Phe
 420 425 430

Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg
 435 440 445

Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val Val
 450 455 460

Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn
 465 470 475 480

Ala Asn Gln Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro
 485 490 495

Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr
 500 505 510

Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro
 515 520 525

Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg
 530 535 540

Ala Arg Thr Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn Arg
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Gln Phe His Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala
 565 570 575

Thr Val Val Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn Met
 580 585 590

Leu Lys Thr Val Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly Trp
 595 600 605

Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile Met
 610 615 620

Ala Ser Leu Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu Ser
 625 630 635 640

His Arg Phe Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser Glu
 645 650 655

Met Val Met Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser
 660 665 670

Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys
 675 680 685

Gln Ala Val Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly Asn
 690 695 700

Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr Glu
 705 710 715 720

Cys Leu Tyr Arg Asn Arg Asp Val Asp His Glu Phe Val Asp Glu Phe
 725 730 735

Tyr Ala Tyr Leu Arg Lys His Phe Ser Met Met Ile Leu Ser Asp Asp
 740 745 750

Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala
 755 760 765

Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe
 770 775 780

Met Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro
 785 790 795 800
 His Glu Phe Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp Asp
 805 810 815
 Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly
 820 825 830
 Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile Glu
 835 840 845
 Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His Pro
 850 855 860
 Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile Arg
 865 870 875 880
 Lys Leu His Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser Val
 885 890 895
 Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr
 900 905 910
 Glu Ala Met Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala Cys
 915 920 925
 Val Leu Cys Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg
 930 935 940
 Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr
 945 950 955 960
 Ser His Lys Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro
 965 970 975
 Gly Cys Asp Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser
 980 985 990
 Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala
 995 1000 1005
 Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser
 1010 1015 1020
 Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr
 1025 1030 1035

Asn	Ala	Gly	Asp	Tyr	Ile	Leu	Ala	Asn	Thr	Cys	Thr	Glu	Arg	Leu
1040						1045					1050			
Lys	Leu	Phe	Ala	Ala	Glu	Thr	Leu	Lys	Ala	Thr	Glu	Glu	Thr	Phe
1055						1060					1065			
Lys	Leu	Ser	Tyr	Gly	Ile	Ala	Thr	Val	Arg	Glu	Val	Leu	Ser	Asp
1070						1075					1080			
Arg	Glu	Leu	His	Leu	Ser	Trp	Glu	Val	Gly	Lys	Pro	Arg	Pro	Pro
1085						1090					1095			
Leu	Asn	Arg	Asn	Tyr	Val	Phe	Thr	Gly	Tyr	Arg	Val	Thr	Lys	Asn
1100						1105					1110			
Ser	Lys	Val	Gln	Ile	Gly	Glu	Tyr	Thr	Phe	Glu	Lys	Gly	Asp	Tyr
1115						1120					1125			
Gly	Asp	Ala	Val	Val	Tyr	Arg	Gly	Thr	Thr	Thr	Tyr	Lys	Leu	Asn
1130						1135					1140			
Val	Gly	Asp	Tyr	Phe	Val	Leu	Thr	Ser	His	Thr	Val	Met	Pro	Leu
1145						1150					1155			
Ser	Ala	Pro	Thr	Leu	Val	Pro	Gln	Glu	His	Tyr	Val	Arg	Ile	Thr
1160						1165					1170			
Gly	Leu	Tyr	Pro	Thr	Leu	Asn	Ile	Ser	Asp	Glu	Phe	Ser	Ser	Asn
1175						1180					1185			
Val	Ala	Asn	Tyr	Gln	Lys	Val	Gly	Met	Gln	Lys	Tyr	Ser	Thr	Leu
1190						1195					1200			
Gln	Gly	Pro	Pro	Gly	Thr	Gly	Lys	Ser	His	Phe	Ala	Ile	Gly	Leu
1205						1210					1215			
Ala	Leu	Tyr	Tyr	Pro	Ser	Ala	Arg	Ile	Val	Tyr	Thr	Ala	Cys	Ser
1220						1225					1230			
His	Ala	Ala	Val	Asp	Ala	Leu	Cys	Glu	Lys	Ala	Leu	Lys	Tyr	Leu
1235						1240					1245			
Pro	Ile	Asp	Lys	Cys	Ser	Arg	Ile	Ile	Pro	Ala	Arg	Ala	Arg	Val
1250						1255					1260			

Glu Cys 1265	Phe Asp Lys Phe Lys 1270	Val Asn Ser Thr Leu 1275	Glu Gln Tyr
Val Phe 1280	Cys Thr Val Asn Ala 1285	Leu Pro Glu Thr Thr 1290	Ala Asp Ile
Val Val 1295	Phe Asp Glu Ile Ser 1300	Met Ala Thr Asn Tyr 1305	Asp Leu Ser
Val Val 1310	Asn Ala Arg Leu Arg 1315	Ala Lys His Tyr Val 1320	Tyr Ile Gly
Asp Pro 1325	Ala Gln Leu Pro Ala 1330	Pro Arg Thr Leu Leu 1335	Thr Lys Gly
Thr Leu 1340	Glu Pro Glu Tyr Phe 1345	Asn Ser Val Cys Arg 1350	Leu Met Lys
Thr Ile 1355	Gly Pro Asp Met Phe 1360	Leu Gly Thr Cys Arg 1365	Arg Cys Pro
Ala Glu 1370	Ile Val Asp Thr Val 1375	Ser Ala Leu Val Tyr 1380	Asp Asn Lys
Leu Lys 1385	Ala His Lys Asp Lys 1390	Ser Ala Gln Cys Phe 1395	Lys Met Phe
Tyr Lys 1400	Gly Val Ile Thr His 1405	Asp Val Ser Ser Ala 1410	Ile Asn Arg
Pro Gln 1415	Ile Gly Val Val Arg 1420	Glu Phe Leu Thr Arg 1425	Asn Pro Ala
Trp Arg 1430	Lys Ala Val Phe Ile 1435	Ser Pro Tyr Asn Ser 1440	Gln Asn Ala
Val Ala 1445	Ser Lys Ile Leu Gly 1450	Leu Pro Thr Gln Thr 1455	Val Asp Ser
Ser Gln 1460	Gly Ser Glu Tyr Asp 1465	Tyr Val Ile Phe Thr 1470	Gln Thr Thr
Glu Thr 1475	Ala His Ser Cys Asn 1480	Val Asn Arg Phe Asn 1485	Val Ala Ile
Thr Arg 1490	Ala Lys Ile Gly Ile 1495	Leu Cys Ile Met Ser 1500	Asp Arg Asp

Leu Tyr 1505	Asp Lys Leu Gln Phe 1510	Thr Ser Leu Glu Ile 1515	Pro Arg Arg
Asn Val 1520	Ala Thr Leu Gln Ala 1525	Glu Asn Val Thr Gly 1530	Leu Phe Lys
Asp Cys 1535	Ser Lys Ile Ile Thr 1540	Gly Leu His Pro Thr 1545	Gln Ala Pro
Thr His 1550	Leu Ser Val Asp Ile 1555	Lys Phe Lys Thr Glu 1560	Gly Leu Cys
Val Asp 1565	Ile Pro Gly Ile Pro 1570	Lys Asp Met Thr Tyr 1575	Arg Arg Leu
Ile Ser 1580	Met Met Gly Phe Lys 1585	Met Asn Tyr Gln Val 1590	Asn Gly Tyr
Pro Asn 1595	Met Phe Ile Thr Arg 1600	Glu Glu Ala Ile Arg 1605	His Val Arg
Ala Trp 1610	Ile Gly Phe Asp Val 1615	Glu Gly Cys His Ala 1620	Thr Arg Asp
Ala Val 1625	Gly Thr Asn Leu Pro 1630	Leu Gln Leu Gly Phe 1635	Ser Thr Gly
Val Asn 1640	Leu Val Ala Val Pro 1645	Thr Gly Tyr Val Asp 1650	Thr Glu Asn
Asn Thr 1655	Glu Phe Thr Arg Val 1660	Asn Ala Lys Pro Pro 1665	Pro Gly Asp
Gln Phe 1670	Lys His Leu Ile Pro 1675	Leu Met Tyr Lys Gly 1680	Leu Pro Trp
Asn Val 1685	Val Arg Ile Lys Ile 1690	Val Gln Met Leu Ser 1695	Asp Thr Leu
Lys Gly 1700	Leu Ser Asp Arg Val 1705	Val Phe Val Leu Trp 1710	Ala His Gly

Phe	Glu	Leu	Thr	Ser	Met	Lys	Tyr	Phe	Val	Lys	Ile	Gly	Pro	Glu
1715						1720					1725			
Arg	Thr	Cys	Cys	Leu	Cys	Asp	Lys	Arg	Ala	Thr	Cys	Phe	Ser	Thr
1730						1735					1740			
Ser	Ser	Asp	Thr	Tyr	Ala	Cys	Trp	Asn	His	Ser	Val	Gly	Phe	Asp
1745						1750					1755			
Tyr	Val	Tyr	Asn	Pro	Phe	Met	Ile	Asp	Val	Gln	Gln	Trp	Gly	Phe
1760						1765					1770			
Thr	Gly	Asn	Leu	Gln	Ser	Asn	His	Asp	Gln	His	Cys	Gln	Val	His
1775						1780					1785			
Gly	Asn	Ala	His	Val	Ala	Ser	Cys	Asp	Ala	Ile	Met	Thr	Arg	Cys
1790						1795					1800			
Leu	Ala	Val	His	Glu	Cys	Phe	Val	Lys	Arg	Val	Asp	Trp	Ser	Val
1805						1810					1815			
Glu	Tyr	Pro	Ile	Ile	Gly	Asp	Glu	Leu	Arg	Val	Asn	Ser	Ala	Cys
1820						1825					1830			
Arg	Lys	Val	Gln	His	Met	Val	Val	Lys	Ser	Ala	Leu	Leu	Ala	Asp
1835						1840					1845			
Lys	Phe	Pro	Val	Leu	His	Asp	Ile	Gly	Asn	Pro	Lys	Ala	Ile	Lys
1850						1855					1860			
Cys	Val	Pro	Gln	Ala	Glu	Val	Glu	Trp	Lys	Phe	Tyr	Asp	Ala	Gln
1865						1870					1875			
Pro	Cys	Ser	Asp	Lys	Ala	Tyr	Lys	Ile	Glu	Glu	Leu	Phe	Tyr	Ser
1880						1885					1890			
Tyr	Ala	Thr	His	His	Asp	Lys	Phe	Thr	Asp	Gly	Val	Cys	Leu	Phe
1895						1900					1905			
Trp	Asn	Cys	Asn	Val	Asp	Arg	Tyr	Pro	Ala	Asn	Ala	Ile	Val	Cys
1910						1915					1920			
Arg	Phe	Asp	Thr	Arg	Val	Leu	Ser	Asn	Leu	Asn	Leu	Pro	Gly	Cys
1925						1930					1935			
Asp	Gly	Gly	Ser	Leu	Tyr	Val	Asn	Lys	His	Ala	Phe	His	Thr	Pro
1940						1945					1950			

Ala	Phe	Asp	Lys	Ser	Ala	Phe	Thr	Asn	Leu	Lys	Gln	Leu	Pro	Phe
1955						1960					1965			
Phe	Tyr	Tyr	Ser	Asp	Ser	Pro	Cys	Glu	Ser	His	Gly	Lys	Gln	Val
1970						1975					1980			
Val	Ser	Asp	Ile	Asp	Tyr	Val	Pro	Leu	Lys	Ser	Ala	Thr	Cys	Ile
1985						1990					1995			
Thr	Arg	Cys	Asn	Leu	Gly	Gly	Ala	Val	Cys	Arg	His	His	Ala	Asn
2000						2005					2010			
Glu	Tyr	Arg	Gln	Tyr	Leu	Asp	Ala	Tyr	Asn	Met	Met	Ile	Ser	Ala
2015						2020					2025			
Gly	Phe	Ser	Leu	Trp	Ile	Tyr	Lys	Gln	Phe	Asp	Thr	Tyr	Asn	Leu
2030						2035					2040			
Trp	Asn	Thr	Phe	Thr	Arg	Leu	Gln	Ser	Leu	Glu	Asn	Val	Ala	Tyr
2045						2050					2055			
Asn	Val	Val	Asn	Lys	Gly	His	Phe	Asp	Gly	His	Ala	Gly	Glu	Ala
2060						2065					2070			
Pro	Val	Ser	Ile	Ile	Asn	Asn	Ala	Val	Tyr	Thr	Lys	Val	Asp	Gly
2075						2080					2085			
Ile	Asp	Val	Glu	Ile	Phe	Glu	Asn	Lys	Thr	Thr	Leu	Pro	Val	Asn
2090						2095					2100			
Val	Ala	Phe	Glu	Leu	Trp	Ala	Lys	Arg	Asn	Ile	Lys	Pro	Val	Pro
2105						2110					2115			
Glu	Ile	Lys	Ile	Leu	Asn	Asn	Leu	Gly	Val	Asp	Ile	Ala	Ala	Asn
2120						2125					2130			
Thr	Val	Ile	Trp	Asp	Tyr	Lys	Arg	Glu	Ala	Pro	Ala	His	Val	Ser
2135						2140					2145			
Thr	Ile	Gly	Val	Cys	Thr	Met	Thr	Asp	Ile	Ala	Lys	Lys	Pro	Thr
2150						2155					2160			
Glu	Ser	Ala	Cys	Ser	Ser	Leu	Thr	Val	Leu	Phe	Asp	Gly	Arg	Val
2165						2170					2175			
Glu	Gly	Gln	Val	Asp	Leu	Phe	Arg	Asn	Ala	Arg	Asn	Gly	Val	Leu

2180		2185		2190
Ile Thr 2195	Glu Gly Ser Val	Lys 2200	Gly Leu Thr Pro	Ser Lys Gly Pro 2205
Ala Gln 2210	Ala Ser Val Asn	Gly 2215	Val Thr Leu Ile	Gly Glu Ser Val 2220
Lys Thr 2225	Gln Phe Asn Tyr	Phe 2230	Lys Lys Val Asp	Gly Ile Ile Gln 2235
Gln Leu 2240	Pro Glu Thr Tyr	Phe 2245	Thr Gln Ser Arg	Asp Leu Glu Asp 2250
Phe Lys 2255	Pro Arg Ser Gln	Met 2260	Glu Thr Asp Phe	Leu Glu Leu Ala 2265
Met Asp 2270	Glu Phe Ile Gln	Arg 2275	Tyr Lys Leu Glu	Gly Tyr Ala Phe 2280
Glu His 2285	Ile Val Tyr Gly	Asp 2290	Phe Ser His Gly	Gln Leu Gly Gly 2295
Leu His 2300	Leu Met Ile Gly	Leu 2305	Ala Lys Arg Ser	Gln Asp Ser Pro 2310
Leu Lys 2315	Leu Glu Asp Phe	Ile 2320	Pro Met Asp Ser	Thr Val Lys Asn 2325
Tyr Phe 2330	Ile Thr Asp Ala	Gln 2335	Thr Gly Ser Ser	Lys Cys Val Cys 2340
Ser Val 2345	Ile Asp Leu Leu	Leu 2350	Asp Asp Phe Val	Glu Ile Ile Lys 2355
Ser Gln 2360	Asp Leu Ser Val	Ile 2365	Ser Lys Val Val	Lys Val Thr Ile 2370
Asp Tyr 2375	Ala Glu Ile Ser	Phe 2380	Met Leu Trp Cys	Lys Asp Gly His 2385
Val Glu 2390	Thr Phe Tyr Pro	Lys 2395	Leu Gln Ala Ser	Gln Ala Trp Gln 2400
Pro Gly 2405	Val Ala Met Pro	Asn 2410	Leu Tyr Lys Met	Gln Arg Met Leu 2415

Leu	Glu	Lys	Cys	Asp	Leu	Gln	Asn	Tyr	Gly	Glu	Asn	Ala	Val	Ile
2420						2425					2430			
Pro	Lys	Gly	Ile	Met	Met	Asn	Val	Ala	Lys	Tyr	Thr	Gln	Leu	Cys
2435						2440					2445			
Gln	Tyr	Leu	Asn	Thr	Leu	Thr	Leu	Ala	Val	Pro	Tyr	Asn	Met	Arg
2450						2455					2460			
Val	Ile	His	Phe	Gly	Ala	Gly	Ser	Asp	Lys	Gly	Val	Ala	Pro	Gly
2465						2470					2475			
Thr	Ala	Val	Leu	Arg	Gln	Trp	Leu	Pro	Thr	Gly	Thr	Leu	Leu	Val
2480						2485					2490			
Asp	Ser	Asp	Leu	Asn	Asp	Phe	Val	Ser	Asp	Ala	Asp	Ser	Thr	Leu
2495						2500					2505			
Ile	Gly	Asp	Cys	Ala	Thr	Val	His	Thr	Ala	Asn	Lys	Trp	Asp	Leu
2510						2515					2520			
Ile	Ile	Ser	Asp	Met	Tyr	Asp	Pro	Arg	Thr	Lys	His	Val	Thr	Lys
2525						2530					2535			
Glu	Asn	Asp	Ser	Lys	Glu	Gly	Phe	Phe	Thr	Tyr	Leu	Cys	Gly	Phe
2540						2545					2550			
Ile	Lys	Gln	Lys	Leu	Ala	Leu	Gly	Gly	Ser	Ile	Ala	Val	Lys	Ile
2555						2560					2565			
Thr	Glu	His	Ser	Trp	Asn	Ala	Asp	Leu	Tyr	Lys	Leu	Met	Gly	His
2570						2575					2580			
Phe	Ser	Trp	Trp	Thr	Ala	Phe	Val	Thr	Asn	Val	Asn	Ala	Ser	Ser
2585						2590					2595			
Ser	Glu	Ala	Phe	Leu	Ile	Gly	Ala	Asn	Tyr	Leu	Gly	Lys	Pro	Lys
2600						2605					2610			
Glu	Gln	Ile	Asp	Gly	Tyr	Thr	Met	His	Ala	Asn	Tyr	Ile	Phe	Trp
2615						2620					2625			
Arg	Asn	Thr	Asn	Pro	Ile	Gln	Leu	Ser	Ser	Tyr	Ser	Leu	Phe	Asp
2630						2635					2640			
Met	Ser	Lys	Phe	Pro	Leu	Lys	Leu	Arg	Gly	Thr	Ala	Val	Met	Ser
2645						2650					2655			

Leu Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu
 2660 2665 2670

Lys Gly Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser
 2675 2680 2685

Ser Asp Ile Leu Val Asn Asn
 2690 2695

<210> 29
 <211> 7073
 <212> PRT
 <213> SARS-CoV CUHK-W1

<400> 29

Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu
 1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly
 20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
 35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
 50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
 65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
 85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
 100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
 115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
 130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn
 145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
 165 170 175

Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
 180 185 190

Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
 195 200 205

Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
 210 215 220

Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
 225 230 235 240

Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu
 245 250 255

Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
 260 265 270

Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
 275 280 285

Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
 290 295 300

Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
 305 310 315 320

Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
 325 330 335

Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
 340 345 350

Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
 355 360 365

Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
 370 375 380

Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
 385 390 395 400

Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
 405 410 415

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
 420 425 430

Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
 435 440 445

Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
 450 455 460

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
 465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
 485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
 500 505 510

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
 515 520 525

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
 530 535 540

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro
 545 550 555 560

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln
 565 570 575

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr
 580 585 590

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln
 595 600 605

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu
 610 615 620

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu
 625 630 635 640

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val
 645 650 655

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys
 660 665 670

Asp	Cys	Val	Lys	Cys	Phe	Ile	Asp	Val	Val	Asn	Lys	Ala	Leu	Glu	Met	675	680	685	
Cys	Ile	Asp	Gln	Val	Thr	Ile	Ala	Gly	Ala	Lys	Leu	Arg	Ser	Leu	Asn	690	695	700	
Leu	Gly	Glu	Val	Phe	Ile	Ala	Gln	Ser	Lys	Gly	Leu	Tyr	Arg	Gln	Cys	705	710	715	720
Ile	Arg	Gly	Lys	Glu	Gln	Leu	Gln	Leu	Leu	Met	Pro	Leu	Lys	Ala	Pro	725	730	735	
Lys	Glu	Val	Thr	Phe	Leu	Glu	Gly	Asp	Ser	His	Asp	Thr	Val	Leu	Thr	740	745	750	
Ser	Glu	Glu	Val	Val	Leu	Lys	Asn	Gly	Glu	Leu	Glu	Ala	Leu	Glu	Thr	755	760	765	
Pro	Val	Asp	Ser	Phe	Thr	Asn	Gly	Ala	Ile	Val	Gly	Thr	Pro	Val	Cys	770	775	780	
Val	Asn	Gly	Leu	Met	Leu	Leu	Glu	Ile	Lys	Asp	Lys	Glu	Gln	Tyr	Cys	785	790	795	800
Ala	Leu	Ser	Pro	Gly	Leu	Leu	Ala	Thr	Asn	Asn	Val	Phe	Arg	Leu	Lys	805	810	815	
Gly	Gly	Ala	Pro	Ile	Lys	Gly	Val	Thr	Phe	Gly	Glu	Asp	Thr	Val	Trp	820	825	830	
Glu	Val	Gln	Gly	Tyr	Lys	Asn	Val	Arg	Ile	Thr	Phe	Glu	Leu	Asp	Glu	835	840	845	
Arg	Val	Asp	Lys	Val	Leu	Asn	Glu	Lys	Cys	Ser	Val	Tyr	Thr	Val	Glu	850	855	860	
Ser	Gly	Thr	Glu	Val	Thr	Glu	Phe	Ala	Cys	Val	Val	Ala	Glu	Ala	Val	865	870	875	880
Val	Lys	Thr	Leu	Gln	Pro	Val	Ser	Asp	Leu	Leu	Thr	Asn	Met	Gly	Ile	885	890	895	
Asp	Leu	Asp	Glu	Trp	Ser	Val	Ala	Thr	Phe	Tyr	Leu	Phe	Asp	Asp	Ala	900	905	910	

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro
 915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Ile Asp
 930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu
 945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu
 965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu
 980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly
 995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile
 1010 1015 1020

Val Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala
 1025 1030 1035

Ala Asn Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu
 1040 1045 1050

Asn Lys Ala Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr
 1055 1060 1065

Ile Lys Leu Asn Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu
 1070 1075 1080

Ser Gly His Asn Leu Ala Lys Lys Cys Leu His Val Val Gly Pro
 1085 1090 1095

Asn Leu Asn Ala Gly Glu Asp Ile Gln Leu Leu Lys Ala Ala Tyr
 1100 1105 1110

Glu Asn Phe Asn Ser Gln Asp Ile Leu Leu Ala Pro Leu Leu Ser
 1115 1120 1125

Ala Gly Ile Phe Gly Ala Lys Pro Leu Gln Ser Leu Gln Val Cys
 1130 1135 1140

Val Gln Thr Val Arg Thr Gln Val Tyr Ile Ala Val Asn Asp Lys
 1145 1150 1155

Ala	Leu	Tyr	Glu	Gln	Val	Val	Met	Asp	Tyr	Leu	Asp	Asn	Leu	Lys
	1160					1165					1170			
Pro	Arg	Val	Glu	Ala	Pro	Lys	Gln	Glu	Glu	Pro	Pro	Asn	Thr	Glu
	1175					1180					1185			
Asp	Ser	Lys	Thr	Glu	Glu	Lys	Ser	Val	Val	Gln	Lys	Pro	Val	Asp
	1190					1195					1200			
Val	Lys	Pro	Lys	Ile	Lys	Ala	Cys	Ile	Asp	Glu	Val	Thr	Thr	Thr
	1205					1210					1215			
Leu	Glu	Glu	Thr	Lys	Phe	Leu	Thr	Asn	Lys	Leu	Leu	Leu	Phe	Ala
	1220					1225					1230			
Asp	Ile	Asn	Gly	Lys	Leu	Tyr	His	Asp	Ser	Gln	Asn	Met	Leu	Arg
	1235					1240					1245			
Gly	Glu	Asp	Met	Ser	Phe	Leu	Glu	Lys	Asp	Ala	Pro	Tyr	Met	Val
	1250					1255					1260			
Gly	Asp	Val	Ile	Thr	Ser	Gly	Asp	Ile	Thr	Cys	Val	Val	Ile	Pro
	1265					1270					1275			
Ser	Lys	Lys	Ala	Gly	Gly	Thr	Thr	Glu	Met	Leu	Ser	Arg	Ala	Leu
	1280					1285					1290			
Lys	Lys	Val	Pro	Val	Asp	Glu	Tyr	Ile	Thr	Thr	Tyr	Pro	Gly	Gln
	1295					1300					1305			
Gly	Cys	Ala	Gly	Tyr	Thr	Leu	Glu	Glu	Ala	Lys	Thr	Ala	Leu	Lys
	1310					1315					1320			
Lys	Cys	Lys	Ser	Ala	Phe	Tyr	Val	Leu	Pro	Ser	Glu	Ala	Pro	Asn
	1325					1330					1335			
Ala	Lys	Glu	Glu	Ile	Leu	Gly	Thr	Val	Ser	Trp	Asn	Leu	Arg	Glu
	1340					1345					1350			
Met	Leu	Ala	His	Ala	Glu	Glu	Thr	Arg	Lys	Leu	Met	Pro	Ile	Cys
	1355					1360					1365			

Met	Asp	Val	Arg	Ala	Ile	Met	Ala	Thr	Ile	Gln	Arg	Lys	Tyr	Lys
1370						1375					1380			
Gly	Ile	Lys	Ile	Gln	Glu	Gly	Ile	Val	Asp	Tyr	Gly	Val	Arg	Phe
1385						1390					1395			
Phe	Phe	Tyr	Thr	Ser	Lys	Glu	Pro	Val	Ala	Ser	Ile	Ile	Thr	Lys
1400						1405					1410			
Leu	Asn	Ser	Leu	Asn	Glu	Pro	Leu	Val	Thr	Met	Pro	Ile	Gly	Tyr
1415						1420					1425			
Val	Thr	His	Gly	Phe	Asn	Leu	Glu	Glu	Ala	Ala	Arg	Cys	Met	Arg
1430						1435					1440			
Ser	Leu	Lys	Ala	Pro	Ala	Val	Val	Ser	Val	Ser	Ser	Pro	Asp	Ala
1445						1450					1455			
Val	Thr	Thr	Tyr	Asn	Gly	Tyr	Leu	Thr	Ser	Ser	Ser	Lys	Thr	Ser
1460						1465					1470			
Glu	Glu	His	Phe	Val	Glu	Thr	Val	Ser	Leu	Ala	Gly	Ser	Tyr	Arg
1475						1480					1485			
Asp	Trp	Ser	Tyr	Ser	Gly	Gln	Arg	Thr	Glu	Leu	Gly	Val	Glu	Phe
1490						1495					1500			
Leu	Lys	Arg	Gly	Asp	Lys	Ile	Val	Tyr	His	Thr	Leu	Glu	Ser	Pro
1505						1510					1515			
Val	Glu	Phe	His	Leu	Asp	Gly	Glu	Val	Leu	Ser	Leu	Asp	Lys	Leu
1520						1525					1530			
Lys	Ser	Leu	Leu	Ser	Leu	Arg	Glu	Val	Lys	Thr	Ile	Lys	Val	Phe
1535						1540					1545			
Thr	Thr	Val	Asp	Asn	Thr	Asn	Leu	His	Thr	Gln	Leu	Val	Asp	Met
1550						1555					1560			
Ser	Met	Thr	Tyr	Gly	Gln	Gln	Phe	Gly	Pro	Thr	Tyr	Leu	Asp	Gly
1565						1570					1575			
Ala	Asp	Val	Thr	Lys	Ile	Lys	Pro	His	Val	Asn	His	Glu	Gly	Lys
1580						1585					1590			
Thr	Phe	Phe	Val	Leu	Pro	Ser	Asp	Asp	Thr	Leu	Arg	Ser	Glu	Ala
1595						1600					1605			

Phe	Glu	Tyr	Tyr	His	Thr	Leu	Asp	Glu	Ser	Phe	Leu	Gly	Arg	Tyr
1610						1615					1620			
Met	Ser	Ala	Leu	Asn	His	Thr	Lys	Lys	Trp	Lys	Phe	Pro	Gln	Val
1625						1630					1635			
Gly	Gly	Leu	Thr	Ser	Ile	Lys	Trp	Ala	Asp	Asn	Asn	Cys	Tyr	Leu
1640						1645					1650			
Ser	Ser	Val	Leu	Leu	Ala	Leu	Gln	Gln	Leu	Glu	Val	Lys	Phe	Asn
1655						1660					1665			
Ala	Pro	Ala	Leu	Gln	Glu	Ala	Tyr	Tyr	Arg	Ala	Arg	Ala	Gly	Asp
1670						1675					1680			
Ala	Ala	Asn	Phe	Cys	Ala	Leu	Ile	Leu	Ala	Tyr	Ser	Asn	Lys	Thr
1685						1690					1695			
Val	Gly	Glu	Leu	Gly	Asp	Val	Arg	Glu	Thr	Met	Thr	His	Leu	Leu
1700						1705					1710			
Gln	His	Ala	Asn	Leu	Glu	Ser	Ala	Lys	Arg	Val	Leu	Asn	Val	Val
1715						1720					1725			
Cys	Lys	His	Cys	Gly	Gln	Lys	Thr	Thr	Thr	Leu	Thr	Gly	Val	Glu
1730						1735					1740			
Ala	Val	Met	Tyr	Met	Gly	Thr	Leu	Ser	Tyr	Asp	Asn	Leu	Lys	Thr
1745						1750					1755			
Gly	Val	Ser	Ile	Pro	Cys	Val	Cys	Gly	Arg	Asp	Ala	Thr	Gln	Tyr
1760						1765					1770			
Leu	Val	Gln	Gln	Glu	Ser	Ser	Phe	Val	Met	Met	Ser	Ala	Pro	Pro
1775						1780					1785			
Ala	Glu	Tyr	Lys	Leu	Gln	Gln	Gly	Thr	Phe	Leu	Cys	Ala	Asn	Glu
1790						1795					1800			
Tyr	Thr	Gly	Asn	Tyr	Gln	Cys	Gly	His	Tyr	Thr	His	Ile	Thr	Ala
1805						1810					1815			

Lys	Glu	Thr	Leu	Tyr	Arg	Ile	Asp	Gly	Ala	His	Leu	Thr	Lys	Met
1820						1825					1830			
Ser	Glu	Tyr	Lys	Gly	Pro	Val	Thr	Asp	Val	Phe	Tyr	Lys	Glu	Thr
1835						1840					1845			
Ser	Tyr	Thr	Thr	Thr	Ile	Lys	Pro	Val	Ser	Tyr	Lys	Leu	Asp	Gly
1850						1855					1860			
Val	Thr	Tyr	Thr	Glu	Ile	Glu	Pro	Lys	Leu	Asp	Gly	Tyr	Tyr	Lys
1865						1870					1875			
Lys	Asp	Asn	Ala	Tyr	Tyr	Thr	Glu	Gln	Pro	Ile	Asp	Leu	Val	Pro
1880						1885					1890			
Thr	Gln	Pro	Leu	Pro	Asn	Ala	Ser	Phe	Asp	Asn	Phe	Lys	Leu	Thr
1895						1900					1905			
Cys	Ser	Asn	Thr	Lys	Phe	Ala	Asp	Asp	Leu	Asn	Gln	Met	Thr	Gly
1910						1915					1920			
Phe	Thr	Lys	Pro	Ala	Ser	Arg	Glu	Leu	Ser	Val	Thr	Phe	Phe	Pro
1925						1930					1935			
Asp	Leu	Asn	Gly	Asp	Val	Val	Ala	Ile	Asp	Tyr	Arg	His	Tyr	Ser
1940						1945					1950			
Ala	Ser	Phe	Lys	Lys	Gly	Ala	Lys	Leu	Leu	His	Lys	Pro	Ile	Val
1955						1960					1965			
Trp	His	Ile	Asn	Gln	Ala	Thr	Thr	Lys	Thr	Thr	Phe	Lys	Pro	Asn
1970						1975					1980			
Thr	Trp	Cys	Leu	Arg	Cys	Leu	Trp	Ser	Thr	Lys	Pro	Val	Asp	Thr
1985						1990					1995			
Ser	Asn	Ser	Phe	Glu	Val	Leu	Ala	Val	Glu	Asp	Thr	Gln	Gly	Met
2000						2005					2010			
Asp	Asn	Leu	Ala	Cys	Glu	Ser	Gln	Gln	Pro	Thr	Ser	Glu	Glu	Val
2015						2020					2025			
Val	Glu	Asn	Pro	Thr	Ile	Gln	Lys	Glu	Val	Ile	Glu	Cys	Asp	Val
2030						2035					2040			
Lys	Thr	Thr	Glu	Val	Val	Gly	Asn	Val	Ile	Leu	Lys	Pro	Ser	Asp
2045						2050					2055			

Glu Gly 2060	Val Lys Val Thr	Gln 2065	Glu Leu Gly His	Glu 2070	Asp Leu Met
Ala Ala 2075	Tyr Val Glu Asn Thr	2080	Ser Ile Thr Ile	Lys 2085	Lys Pro Asn
Glu Leu 2090	Ser Leu Ala Leu Gly	2095	Leu Lys Thr Ile	Ala 2100	Thr His Gly
Ile Ala 2105	Ala Ile Asn Ser Val	2110	Pro Trp Ser Lys Ile	2115	Leu Ala Tyr
Val Lys 2120	Pro Phe Leu Gly Gln	2125	Ala Ala Ile Thr Thr	2130	Ser Asn Cys
Ala Lys 2135	Arg Leu Ala Gln Arg	2140	Val Phe Asn Asn Tyr	2145	Met Pro Tyr
Val Phe 2150	Thr Leu Leu Phe Gln	2155	Leu Cys Thr Phe Thr	2160	Lys Ser Thr
Asn Ser 2165	Arg Ile Arg Ala Ser	2170	Leu Pro Thr Thr Ile	2175	Ala Lys Asn
Ser Val 2180	Lys Ser Val Ala Lys	2185	Leu Cys Leu Asp Ala	2190	Gly Ile Asn
Tyr Val 2195	Lys Ser Pro Lys Phe	2200	Ser Lys Leu Phe Thr	2205	Ile Ala Met
Trp Leu 2210	Leu Leu Leu Ser Ile	2215	Cys Leu Gly Ser Leu	2220	Ile Cys Val
Thr Ala 2225	Ala Phe Gly Val Leu	2230	Leu Ser Asn Phe Gly	2235	Ala Pro Ser
Tyr Cys 2240	Asn Gly Val Arg Glu	2245	Leu Tyr Leu Asn Ser	2250	Ser Asn Val
Thr Thr 2255	Met Asp Phe Cys Glu	2260	Gly Ser Phe Pro Cys	2265	Ser Ile Cys

Leu 2270	Ser	Gly	Leu	Asp	Ser	Leu 2275	Asp	Ser	Tyr	Pro	Ala 2280	Leu	Glu	Thr
Ile 2285	Gln	Val	Thr	Ile	Ser	Ser 2290	Tyr	Lys	Leu	Asp	Leu 2295	Thr	Ile	Leu
Gly 2300	Leu	Ala	Ala	Glu	Trp	Val 2305	Leu	Ala	Tyr	Met	Leu 2310	Phe	Thr	Lys
Phe 2315	Phe	Tyr	Leu	Leu	Gly	Leu 2320	Ser	Ala	Ile	Met	Gln 2325	Val	Phe	Phe
Gly 2330	Tyr	Phe	Ala	Ser	His	Phe 2335	Ile	Ser	Asn	Ser	Trp 2340	Leu	Met	Trp
Phe 2345	Ile	Ile	Ser	Ile	Val	Gln 2350	Met	Ala	Pro	Val	Ser 2355	Ala	Met	Val
Arg 2360	Met	Tyr	Ile	Phe	Phe	Ala 2365	Ser	Phe	Tyr	Tyr	Ile 2370	Trp	Lys	Ser
Tyr 2375	Val	His	Ile	Met	Asp	Gly 2380	Cys	Thr	Ser	Ser	Thr 2385	Cys	Met	Met
Cys 2390	Tyr	Lys	Arg	Asn	Arg	Ala 2395	Thr	Arg	Val	Glu	Cys 2400	Thr	Thr	Ile
Val 2405	Asn	Gly	Met	Lys	Arg	Ser 2410	Phe	Tyr	Val	Tyr	Ala 2415	Asn	Gly	Gly
Arg 2420	Gly	Phe	Cys	Lys	Thr	His 2425	Asn	Trp	Asn	Cys	Leu 2430	Asn	Cys	Asp
Thr 2435	Phe	Cys	Thr	Gly	Ser	Thr 2440	Phe	Ile	Ser	Asp	Glu 2445	Val	Ala	Arg
Asp 2450	Leu	Ser	Leu	Gln	Phe	Lys 2455	Arg	Pro	Ile	Asn	Pro 2460	Thr	Asp	Gln
Ser 2465	Ser	Tyr	Ile	Val	Asp	Ser 2470	Val	Ala	Val	Lys	Asn 2475	Gly	Ala	Leu
His 2480	Leu	Tyr	Phe	Asp	Lys	Ala 2485	Gly	Gln	Lys	Thr	Tyr 2490	Glu	Arg	His
Pro 2495	Leu	Ser	His	Phe	Val	Asn 2500	Leu	Asp	Asn	Leu	Arg 2505	Ala	Asn	Asn

Thr	Lys	Gly	Ser	Leu	Pro	Ile	Asn	Val	Ile	Val	Phe	Asp	Gly	Lys
	2510					2515					2520			
Ser	Lys	Cys	Asp	Glu	Ser	Ala	Ser	Lys	Ser	Ala	Ser	Val	Tyr	Tyr
	2525					2530					2535			
Ser	Gln	Leu	Met	Cys	Gln	Pro	Ile	Leu	Leu	Leu	Asp	Gln	Ala	Leu
	2540					2545					2550			
Val	Ser	Asp	Val	Gly	Asp	Ser	Thr	Glu	Val	Ser	Val	Lys	Met	Phe
	2555					2560					2565			
Asp	Ala	Tyr	Val	Asp	Thr	Phe	Ser	Ala	Thr	Phe	Ser	Val	Pro	Met
	2570					2575					2580			
Glu	Lys	Leu	Lys	Ala	Leu	Val	Ala	Thr	Ala	His	Ser	Glu	Leu	Ala
	2585					2590					2595			
Lys	Gly	Val	Ala	Leu	Asp	Gly	Val	Leu	Ser	Thr	Phe	Val	Ser	Ala
	2600					2605					2610			
Ala	Arg	Gln	Gly	Val	Val	Asp	Thr	Asp	Val	Asp	Thr	Lys	Asp	Val
	2615					2620					2625			
Ile	Glu	Cys	Leu	Lys	Leu	Ser	His	His	Ser	Asp	Leu	Glu	Val	Thr
	2630					2635					2640			
Gly	Asp	Ser	Cys	Asn	Asn	Phe	Met	Leu	Thr	Tyr	Asn	Lys	Val	Glu
	2645					2650					2655			
Asn	Met	Thr	Pro	Arg	Asp	Leu	Gly	Ala	Cys	Ile	Asp	Cys	Asn	Ala
	2660					2665					2670			
Arg	His	Ile	Asn	Ala	Gln	Val	Ala	Lys	Ser	His	Asn	Val	Ser	Leu
	2675					2680					2685			
Ile	Trp	Asn	Val	Lys	Asp	Tyr	Met	Ser	Leu	Ser	Glu	Gln	Leu	Arg
	2690					2695					2700			
Lys	Gln	Ile	Arg	Ser	Ala	Ala	Lys	Lys	Asn	Asn	Ile	Pro	Phe	Arg
	2705					2710					2715			
Leu	Thr	Cys	Ala	Thr	Thr	Arg	Gln	Val	Val	Asn	Val	Ile	Thr	Thr
	2720					2725					2730			

Lys Ile 2735	Ser Leu Lys Gly Gly 2740	Lys Ile Val Ser Thr 2745	Cys Phe Lys
Leu Met 2750	Leu Lys Ala Thr 2755	Leu Cys Val Leu Ala 2760	Ala Leu Val
Cys Tyr 2765	Ile Val Met Pro Val 2770	His Thr Leu Ser Ile 2775	His Asp Gly
Tyr Thr 2780	Asn Glu Ile Ile Gly 2785	Tyr Lys Ala Ile Gln 2790	Asp Gly Val
Thr Arg 2795	Asp Ile Ile Ser Thr 2800	Asp Asp Cys Phe Ala 2805	Asn Lys His
Ala Gly 2810	Phe Asp Ala Trp Phe 2815	Ser Gln Arg Gly Gly 2820	Ser Tyr Lys
Asn Asp 2825	Lys Ser Cys Pro Val 2830	Val Ala Ala Ile Ile 2835	Thr Arg Glu
Ile Gly 2840	Phe Ile Val Pro Gly 2845	Leu Pro Gly Thr Val 2850	Leu Arg Ala
Ile Asn 2855	Gly Asp Phe Leu His 2860	Phe Leu Pro Arg Val 2865	Phe Ser Ala
Val Gly 2870	Asn Ile Cys Tyr Thr 2875	Pro Ser Lys Leu Ile 2880	Glu Tyr Ser
Asp Phe 2885	Ala Thr Ser Ala Cys 2890	Val Leu Ala Ala Glu 2895	Cys Thr Ile
Phe Lys 2900	Asp Ala Met Gly Lys 2905	Pro Val Pro Tyr Cys 2910	Tyr Asp Thr
Asn Leu 2915	Leu Glu Gly Ser Ile 2920	Ser Tyr Ser Glu Leu 2925	Arg Pro Asp
Thr Arg 2930	Tyr Val Leu Met Asp 2935	Gly Ser Ile Ile Gln 2940	Phe Pro Asn
Thr Tyr 2945	Leu Glu Gly Ser Val 2950	Arg Val Val Thr Thr 2955	Phe Asp Ala
Glu Tyr 2960	Cys Arg His Gly Thr 2965	Cys Glu Arg Ser Glu 2970	Val Gly Ile

Cys	Leu	Ser	Thr	Ser	Gly	Arg	Trp	Val	Leu	Asn	Asn	Glu	His	Tyr
2975						2980					2985			
Arg	Ala	Leu	Ser	Gly	Val	Phe	Cys	Gly	Val	Asp	Ala	Met	Asn	Leu
2990						2995					3000			
Ile	Ala	Asn	Ile	Phe	Thr	Pro	Leu	Val	Gln	Pro	Val	Gly	Ala	Leu
3005						3010					3015			
Asp	Val	Ser	Ala	Ser	Val	Val	Ala	Gly	Gly	Ile	Ile	Ala	Ile	Leu
3020						3025					3030			
Val	Thr	Cys	Ala	Ala	Tyr	Tyr	Phe	Met	Lys	Phe	Arg	Arg	Ala	Phe
3035						3040					3045			
Gly	Glu	Tyr	Asn	His	Val	Val	Ala	Ala	Asn	Ala	Leu	Leu	Phe	Leu
3050						3055					3060			
Met	Ser	Phe	Thr	Ile	Leu	Cys	Leu	Ala	Pro	Ala	Tyr	Ser	Phe	Leu
3065						3070					3075			
Pro	Gly	Val	Tyr	Ser	Val	Phe	Tyr	Leu	Tyr	Leu	Thr	Phe	Tyr	Phe
3080						3085					3090			
Thr	Asn	Asp	Val	Ser	Phe	Leu	Ala	His	Leu	Gln	Trp	Phe	Ala	Met
3095						3100					3105			
Phe	Ser	Pro	Ile	Val	Pro	Phe	Trp	Ile	Thr	Ala	Ile	Tyr	Val	Phe
3110						3115					3120			
Cys	Ile	Ser	Leu	Lys	His	Cys	His	Trp	Phe	Phe	Asn	Asn	Tyr	Leu
3125						3130					3135			
Arg	Lys	Arg	Val	Met	Phe	Asn	Gly	Val	Thr	Phe	Ser	Thr	Phe	Glu
3140						3145					3150			
Glu	Ala	Ala	Leu	Cys	Thr	Phe	Leu	Leu	Asn	Lys	Glu	Met	Tyr	Leu
3155						3160					3165			
Lys	Leu	Arg	Ser	Glu	Thr	Leu	Leu	Pro	Leu	Thr	Gln	Tyr	Asn	Arg
3170						3175					3180			
Tyr	Leu	Ala	Leu	Tyr	Asn	Lys	Tyr	Lys	Tyr	Phe	Ser	Gly	Ala	Leu
3185						3190					3195			

Asp	Thr	Thr	Ser	Tyr	Arg	Glu	Ala	Ala	Cys	Cys	His	Leu	Ala	Lys
3200						3205					3210			
Ala	Leu	Asn	Asp	Phe	Ser	Asn	Ser	Gly	Ala	Asp	Val	Leu	Tyr	Gln
3215						3220					3225			
Pro	Pro	Gln	Thr	Ser	Ile	Thr	Ser	Ala	Val	Leu	Gln	Ser	Gly	Phe
3230						3235					3240			
Arg	Lys	Met	Ala	Phe	Pro	Ser	Gly	Lys	Val	Glu	Gly	Cys	Met	Val
3245						3250					3255			
Gln	Val	Thr	Cys	Gly	Thr	Thr	Thr	Leu	Asn	Gly	Leu	Trp	Leu	Asp
3260						3265					3270			
Asp	Thr	Val	Tyr	Cys	Pro	Arg	His	Val	Ile	Cys	Thr	Ala	Glu	Asp
3275						3280					3285			
Met	Leu	Asn	Pro	Asn	Tyr	Glu	Asp	Leu	Leu	Ile	Arg	Lys	Ser	Asn
3290						3295					3300			
His	Ser	Phe	Leu	Val	Gln	Ala	Gly	Asn	Val	Gln	Leu	Arg	Val	Ile
3305						3310					3315			
Gly	His	Ser	Met	Gln	Asn	Cys	Leu	Leu	Arg	Leu	Lys	Val	Asp	Thr
3320						3325					3330			
Ser	Asn	Pro	Lys	Thr	Pro	Lys	Tyr	Lys	Phe	Val	Arg	Ile	Gln	Pro
3335						3340					3345			
Gly	Gln	Thr	Phe	Ser	Val	Leu	Ala	Cys	Tyr	Asn	Gly	Ser	Pro	Ser
3350						3355					3360			
Gly	Val	Tyr	Gln	Cys	Ala	Met	Arg	Pro	Asn	His	Thr	Ile	Lys	Gly
3365						3370					3375			
Ser	Phe	Leu	Asn	Gly	Ser	Cys	Gly	Ser	Val	Gly	Phe	Asn	Ile	Asp
3380						3385					3390			
Tyr	Asp	Cys	Val	Ser	Phe	Cys	Tyr	Met	His	His	Met	Glu	Leu	Pro
3395						3400					3405			
Thr	Gly	Val	His	Ala	Gly	Thr	Asp	Leu	Glu	Gly	Lys	Phe	Tyr	Gly
3410						3415					3420			
Pro	Phe	Val	Asp	Arg	Gln	Thr	Ala	Gln	Ala	Ala	Gly	Thr	Asp	Thr
3425						3430					3435			

Thr 3440	Ile	Thr	Leu	Asn	Val	Leu 3445	Ala	Trp	Leu	Tyr	Ala 3450	Ala	Val	Ile
Asn 3455	Gly	Asp	Arg	Trp	Phe	Leu 3460	Asn	Arg	Phe	Thr	Thr 3465	Thr	Leu	Asn
Asp 3470	Phe	Asn	Leu	Val	Ala	Met 3475	Lys	Tyr	Asn	Tyr	Glu 3480	Pro	Leu	Thr
Gln 3485	Asp	His	Val	Asp	Ile	Leu 3490	Gly	Pro	Leu	Ser	Ala 3495	Gln	Thr	Gly
Ile 3500	Ala	Val	Leu	Asp	Met	Cys 3505	Ala	Ala	Leu	Lys	Glu 3510	Leu	Leu	Gln
Asn 3515	Gly	Met	Asn	Gly	Arg	Thr 3520	Ile	Leu	Gly	Ser	Thr 3525	Ile	Leu	Glu
Asp 3530	Glu	Phe	Thr	Pro	Phe	Asp 3535	Val	Val	Arg	Gln	Cys 3540	Ser	Gly	Val
Thr 3545	Phe	Gln	Gly	Lys	Phe	Lys 3550	Lys	Ile	Val	Lys	Gly 3555	Thr	His	His
Trp 3560	Met	Leu	Leu	Thr	Phe	Leu 3565	Thr	Ser	Leu	Leu	Ile 3570	Leu	Val	Gln
Ser 3575	Thr	Gln	Trp	Ser	Leu	Phe 3580	Phe	Phe	Val	Tyr	Glu 3585	Asn	Ala	Phe
Leu 3590	Pro	Phe	Thr	Leu	Gly	Ile 3595	Met	Ala	Ile	Ala	Ala 3600	Cys	Ala	Met
Leu 3605	Leu	Val	Lys	His	Lys	His 3610	Ala	Phe	Leu	Cys	Leu 3615	Phe	Leu	Leu
Pro 3620	Ser	Leu	Ala	Thr	Val	Ala 3625	Tyr	Phe	Asn	Met	Val 3630	Tyr	Met	Pro
Ala 3635	Ser	Trp	Val	Met	Arg	Ile 3640	Met	Thr	Trp	Leu	Glu 3645	Leu	Ala	Asp
Thr 3650	Ser	Leu	Ser	Gly	Tyr	Arg 3655	Leu	Lys	Asp	Cys	Val 3660	Met	Tyr	Ala

Ser	Ala	Leu	Val	Leu	Leu	Ile	Leu	Met	Thr	Ala	Arg	Thr	Val	Tyr
3665						3670					3675			
Asp	Asp	Ala	Ala	Arg	Arg	Val	Trp	Thr	Leu	Met	Asn	Val	Ile	Thr
3680						3685					3690			
Leu	Val	Tyr	Lys	Val	Tyr	Tyr	Gly	Asn	Ala	Leu	Asp	Gln	Ala	Ile
3695						3700					3705			
Ser	Met	Trp	Ala	Leu	Val	Ile	Ser	Val	Thr	Ser	Asn	Tyr	Ser	Gly
3710						3715					3720			
Val	Val	Thr	Thr	Ile	Met	Phe	Leu	Ala	Arg	Ala	Ile	Val	Phe	Val
3725						3730					3735			
Cys	Val	Glu	Tyr	Tyr	Pro	Leu	Leu	Phe	Ile	Thr	Gly	Asn	Thr	Leu
3740						3745					3750			
Gln	Cys	Ile	Met	Leu	Val	Tyr	Cys	Phe	Leu	Gly	Tyr	Cys	Cys	Cys
3755						3760					3765			
Cys	Tyr	Phe	Gly	Leu	Phe	Cys	Leu	Leu	Asn	Arg	Tyr	Phe	Arg	Leu
3770						3775					3780			
Thr	Leu	Gly	Val	Tyr	Asp	Tyr	Leu	Val	Ser	Thr	Gln	Glu	Phe	Arg
3785						3790					3795			
Tyr	Met	Asn	Ser	Gln	Gly	Leu	Leu	Pro	Pro	Lys	Ser	Ser	Ile	Asp
3800						3805					3810			
Ala	Phe	Lys	Leu	Asn	Ile	Lys	Leu	Leu	Gly	Ile	Gly	Gly	Lys	Pro
3815						3820					3825			
Cys	Ile	Lys	Val	Ala	Thr	Val	Gln	Ser	Lys	Met	Ser	Asp	Val	Lys
3830						3835					3840			
Cys	Thr	Ser	Val	Val	Leu	Leu	Ser	Val	Leu	Gln	Gln	Leu	Arg	Val
3845						3850					3855			
Glu	Ser	Ser	Ser	Lys	Leu	Trp	Ala	Gln	Cys	Val	Gln	Leu	His	Asn
3860						3865					3870			
Asp	Ile	Leu	Leu	Ala	Lys	Asp	Thr	Thr	Glu	Ala	Phe	Glu	Lys	Met
3875						3880					3885			
Val	Ser	Leu	Leu	Ser	Val	Leu	Leu	Ser	Met	Gln	Gly	Ala	Val	Asp
3890						3895					3900			

Ile Asn 3905	Arg Leu Cys Glu Glu 3910	Met Leu Asp Asn Arg 3915	Ala Thr Leu
Gln Ala 3920	Ile Ala Ser Glu Phe 3925	Ser Ser Leu Pro Ser 3930	Tyr Ala Ala
Tyr Ala 3935	Thr Ala Gln Glu Ala 3940	Tyr Glu Gln Ala Val 3945	Ala Asn Gly
Asp Ser 3950	Glu Val Val Leu Lys 3955	Lys Leu Lys Lys Ser 3960	Leu Asn Val
Ala Lys 3965	Ser Glu Phe Asp Arg 3970	Asp Ala Ala Met Gln 3975	Arg Lys Leu
Glu Lys 3980	Met Ala Asp Gln Ala 3985	Met Thr Gln Met Tyr 3990	Lys Gln Ala
Arg Ser 3995	Glu Asp Lys Arg Ala 4000	Lys Val Thr Ser Ala 4005	Met Gln Thr
Met Leu 4010	Phe Thr Met Leu Arg 4015	Lys Leu Asp Asn Asp 4020	Ala Leu Asn
Asn Ile 4025	Ile Asn Asn Ala Arg 4030	Asp Gly Cys Val Pro 4035	Leu Asn Ile
Ile Pro 4040	Leu Thr Thr Ala Ala 4045	Lys Leu Met Val Val 4050	Val Pro Asp
Tyr Gly 4055	Thr Tyr Lys Asn Thr 4060	Cys Asp Gly Asn Thr 4065	Phe Thr Tyr
Ala Ser 4070	Ala Leu Trp Glu Ile 4075	Gln Gln Val Val Asp 4080	Ala Asp Ser
Lys Ile 4085	Val Gln Leu Ser Glu 4090	Ile Asn Met Asp Asn 4095	Ser Pro Asn
Leu Ala 4100	Trp Pro Leu Ile Val 4105	Thr Ala Leu Arg Ala 4110	Asn Ser Ala
Val Lys 4115	Leu Gln Asn Asn Glu 4120	Leu Ser Pro Val Ala 4125	Leu Arg Gln

Met	Ser	Cys	Ala	Ala	Gly	Thr	Thr	Gln	Thr	Ala	Cys	Thr	Asp	Asp
4130						4135					4140			
Asn	Ala	Leu	Ala	Tyr	Tyr	Asn	Asn	Ser	Lys	Gly	Gly	Arg	Phe	Val
4145						4150					4155			
Leu	Ala	Leu	Leu	Ser	Asp	His	Gln	Asp	Leu	Lys	Trp	Ala	Arg	Phe
4160						4165					4170			
Pro	Lys	Ser	Asp	Gly	Thr	Gly	Thr	Ile	Tyr	Thr	Glu	Leu	Glu	Pro
4175						4180					4185			
Pro	Cys	Arg	Phe	Val	Thr	Asp	Thr	Pro	Lys	Gly	Pro	Lys	Val	Lys
4190						4195					4200			
Tyr	Leu	Tyr	Phe	Ile	Lys	Gly	Leu	Asn	Asn	Leu	Asn	Arg	Gly	Met
4205						4210					4215			
Val	Leu	Gly	Ser	Leu	Ala	Ala	Thr	Val	Arg	Leu	Gln	Ala	Gly	Asn
4220						4225					4230			
Ala	Thr	Glu	Val	Pro	Ala	Asn	Ser	Thr	Val	Leu	Ser	Phe	Cys	Ala
4235						4240					4245			
Phe	Ala	Val	Asp	Pro	Ala	Lys	Ala	Tyr	Lys	Asp	Tyr	Leu	Ala	Ser
4250						4255					4260			
Gly	Gly	Gln	Pro	Ile	Thr	Asn	Cys	Val	Lys	Met	Leu	Cys	Thr	His
4265						4270					4275			
Thr	Gly	Thr	Gly	Gln	Ala	Ile	Thr	Val	Thr	Pro	Glu	Ala	Asn	Met
4280						4285					4290			
Asp	Gln	Glu	Ser	Phe	Gly	Gly	Ala	Ser	Cys	Cys	Leu	Tyr	Cys	Arg
4295						4300					4305			
Cys	His	Ile	Asp	His	Pro	Asn	Pro	Lys	Gly	Phe	Cys	Asp	Leu	Lys
4310						4315					4320			
Gly	Lys	Tyr	Val	Gln	Ile	Pro	Thr	Thr	Cys	Ala	Asn	Asp	Pro	Val
4325						4330					4335			
Gly	Phe	Thr	Leu	Arg	Asn	Thr	Val	Cys	Thr	Val	Cys	Gly	Met	Trp
4340						4345					4350			
Lys	Gly	Tyr	Gly	Cys	Ser	Cys	Asp	Gln	Leu	Arg	Glu	Pro	Leu	Met
4355						4360					4365			

Gln Ser	Ala Asp	Ala Ser	Thr	Phe Leu	Asn Arg	Val	Cys Gly	Val
4370			4375			4380		
Ser Ala	Ala Arg	Leu Thr	Pro	Cys Gly	Thr Gly	Thr	Ser Thr	Asp
4385			4390			4395		
Val Val	Tyr Arg	Ala Phe	Asp	Ile Tyr	Asn Glu	Lys	Val Ala	Gly
4400			4405			4410		
Phe Ala	Lys Phe	Leu Lys	Thr	Asn Cys	Cys Arg	Phe	Gln Glu	Lys
4415			4420			4425		
Asp Glu	Glu Gly	Asn Leu	Leu	Asp Ser	Tyr Phe	Val	Val Lys	Arg
4430			4435			4440		
His Thr	Met Ser	Asn Tyr	Gln	His Glu	Glu Thr	Ile	Tyr Asn	Leu
4445			4450			4455		
Val Lys	Asp Cys	Pro Ala	Val	Ala Val	His Asp	Phe	Phe Lys	Phe
4460			4465			4470		
Arg Val	Asp Gly	Asp Met	Val	Pro His	Ile Ser	Arg	Gln Arg	Leu
4475			4480			4485		
Thr Lys	Tyr Thr	Met Ala	Asp	Leu Val	Tyr Ala	Leu	Arg His	Phe
4490			4495			4500		
Asp Glu	Gly Asn	Cys Asp	Thr	Leu Lys	Glu Ile	Leu	Val Thr	Tyr
4505			4510			4515		
Asn Cys	Cys Asp	Asp Asp	Tyr	Phe Asn	Lys Lys	Asp	Trp Tyr	Asp
4520			4525			4530		
Phe Val	Glu Asn	Pro Asp	Ile	Leu Arg	Val Tyr	Ala	Asn Leu	Gly
4535			4540			4545		
Glu Arg	Val Arg	Gln Ser	Leu	Leu Lys	Thr Val	Gln	Phe Cys	Asp
4550			4555			4560		
Ala Met	Arg Asp	Ala Gly	Ile	Val Gly	Val Leu	Thr	Leu Asp	Asn
4565			4570			4575		

Gln Asp 4580	Leu Asn Gly Asn Trp 4585	Tyr Asp Phe Gly Asp 4590	Phe Val Gln
Val Ala 4595	Pro Gly Cys Gly Val 4600	Pro Ile Val Asp Ser 4605	Tyr Tyr Ser
Leu Leu 4610	Met Pro Ile Leu Thr 4615	Leu Thr Arg Ala Leu 4620	Ala Ala Glu
Ser His 4625	Met Asp Ala Asp Leu 4630	Ala Lys Pro Leu Ile 4635	Lys Trp Asp
Leu Leu 4640	Lys Tyr Asp Phe Thr 4645	Glu Glu Arg Leu Cys 4650	Leu Phe Asp
Arg Tyr 4655	Phe Lys Tyr Trp Asp 4660	Gln Thr Tyr His Pro 4665	Asn Cys Ile
Asn Cys 4670	Leu Asp Asp Arg Cys 4675	Ile Leu His Cys Ala 4680	Asn Phe Asn
Val Leu 4685	Phe Ser Thr Val Phe 4690	Pro Pro Thr Ser Phe 4695	Gly Pro Leu
Val Arg 4700	Lys Ile Phe Val Asp 4705	Gly Val Pro Phe Val 4710	Val Ser Thr
Gly Tyr 4715	His Phe Arg Glu Leu 4720	Gly Val Val His Asn 4725	Gln Asp Val
Asn Leu 4730	His Ser Ser Arg Leu 4735	Ser Phe Lys Glu Leu 4740	Leu Val Tyr
Ala Ala 4745	Asp Pro Ala Met His 4750	Ala Ala Ser Gly Asn 4755	Leu Leu Leu
Asp Lys 4760	Arg Thr Thr Cys Phe 4765	Ser Val Ala Ala Leu 4770	Thr Asn Asn
Val Ala 4775	Phe Gln Thr Val Lys 4780	Pro Gly Asn Phe Asn 4785	Lys Asp Phe
Tyr Asp 4790	Phe Ala Val Ser Lys 4795	Gly Phe Phe Lys Glu 4800	Gly Ser Ser

Val	Glu	Leu	Lys	His	Phe	Phe	Phe	Ala	Gln	Asp	Gly	Asn	Ala	Ala
4805						4810					4815			
Ile	Ser	Asp	Tyr	Asp	Tyr	Tyr	Arg	Tyr	Asn	Leu	Pro	Thr	Met	Cys
4820						4825					4830			
Asp	Ile	Arg	Gln	Leu	Leu	Phe	Val	Val	Glu	Val	Val	Asp	Lys	Tyr
4835						4840					4845			
Phe	Asp	Cys	Tyr	Asp	Gly	Gly	Cys	Ile	Asn	Ala	Asn	Gln	Val	Ile
4850						4855					4860			
Val	Asn	Asn	Leu	Asp	Lys	Ser	Ala	Gly	Phe	Pro	Phe	Asn	Lys	Trp
4865						4870					4875			
Gly	Lys	Ala	Arg	Leu	Tyr	Tyr	Asp	Ser	Met	Ser	Tyr	Glu	Asp	Gln
4880						4885					4890			
Asp	Ala	Leu	Phe	Ala	Tyr	Thr	Lys	Arg	Asn	Val	Ile	Pro	Thr	Ile
4895						4900					4905			
Thr	Gln	Met	Asn	Leu	Lys	Tyr	Ala	Ile	Ser	Ala	Lys	Asn	Arg	Ala
4910						4915					4920			
Arg	Thr	Val	Ala	Gly	Val	Ser	Ile	Cys	Ser	Thr	Met	Thr	Asn	Arg
4925						4930					4935			
Gln	Phe	His	Gln	Lys	Leu	Leu	Lys	Ser	Ile	Ala	Ala	Thr	Arg	Gly
4940						4945					4950			
Ala	Thr	Val	Val	Ile	Gly	Thr	Ser	Lys	Phe	Tyr	Gly	Gly	Trp	His
4955						4960					4965			
Asn	Met	Leu	Lys	Thr	Val	Tyr	Ser	Asp	Val	Glu	Thr	Pro	His	Leu
4970						4975					4980			
Met	Gly	Trp	Asp	Tyr	Pro	Lys	Cys	Asp	Arg	Ala	Met	Pro	Asn	Met
4985						4990					4995			
Leu	Arg	Ile	Met	Ala	Ser	Leu	Val	Leu	Ala	Arg	Lys	His	Asn	Thr
5000						5005					5010			
Cys	Cys	Asn	Leu	Ser	His	Arg	Phe	Tyr	Arg	Leu	Ala	Asn	Glu	Cys
5015						5020					5025			
Ala	Gln	Val	Leu	Ser	Glu	Met	Val	Met	Cys	Gly	Gly	Ser	Leu	Tyr
5030						5035					5040			

Val	Lys	Pro	Gly	Gly	Thr	Ser	Ser	Gly	Asp	Ala	Thr	Thr	Ala	Tyr
	5045					5050					5055			
Ala	Asn	Ser	Val	Phe	Asn	Ile	Cys	Gln	Ala	Val	Thr	Ala	Asn	Val
	5060					5065					5070			
Asn	Ala	Leu	Leu	Ser	Thr	Asp	Gly	Asn	Lys	Ile	Ala	Asp	Lys	Tyr
	5075					5080					5085			
Val	Arg	Asn	Leu	Gln	His	Arg	Leu	Tyr	Glu	Cys	Leu	Tyr	Arg	Asn
	5090					5095					5100			
Arg	Asp	Val	Asp	His	Glu	Phe	Val	Asp	Glu	Phe	Tyr	Ala	Tyr	Leu
	5105					5110					5115			
Arg	Lys	His	Phe	Ser	Met	Met	Ile	Leu	Ser	Asp	Asp	Ala	Val	Val
	5120					5125					5130			
Cys	Tyr	Asn	Ser	Asn	Tyr	Ala	Ala	Gln	Gly	Leu	Val	Ala	Ser	Ile
	5135					5140					5145			
Lys	Asn	Phe	Lys	Ala	Val	Leu	Tyr	Tyr	Gln	Asn	Asn	Val	Phe	Met
	5150					5155					5160			
Ser	Glu	Ala	Lys	Cys	Trp	Thr	Glu	Thr	Asp	Leu	Thr	Lys	Gly	Pro
	5165					5170					5175			
His	Glu	Phe	Cys	Ser	Gln	His	Thr	Met	Leu	Val	Lys	Gln	Gly	Asp
	5180					5185					5190			
Asp	Tyr	Val	Tyr	Leu	Pro	Tyr	Pro	Asp	Pro	Ser	Arg	Ile	Leu	Gly
	5195					5200					5205			
Ala	Gly	Cys	Phe	Val	Asp	Asp	Ile	Val	Lys	Thr	Asp	Gly	Thr	Leu
	5210					5215					5220			
Met	Ile	Glu	Arg	Phe	Val	Ser	Leu	Ala	Ile	Asp	Ala	Tyr	Pro	Leu
	5225					5230					5235			
Thr	Lys	His	Pro	Asn	Gln	Glu	Tyr	Ala	Asp	Val	Phe	His	Leu	Tyr
	5240					5245					5250			
Leu	Gln	Tyr	Ile	Arg	Lys	Leu	His	Asp	Glu	Leu	Thr	Gly	His	Met
	5255					5260					5265			

Leu Asp 5270	Met Tyr Ser Val	Met 5275	Leu Thr Asn Asp	Asn 5280	Thr Ser Arg
Tyr Trp 5285	Glu Pro Glu Phe	Tyr 5290	Glu Ala Met Tyr	Thr 5295	Pro His Thr
Val Leu 5300	Gln Ala Val Gly	Ala 5305	Cys Val Leu Cys	Asn 5310	Ser Gln Thr
Ser Leu 5315	Arg Cys Gly Ala	Cys 5320	Ile Arg Arg Pro	Phe 5325	Leu Cys Cys
Lys Cys 5330	Cys Tyr Asp His	Val 5335	Ile Ser Thr Ser	His 5340	Lys Leu Val
Leu Ser 5345	Val Asn Pro Tyr	Val 5350	Cys Asn Ala Pro	Gly 5355	Cys Asp Val
Thr Asp 5360	Val Thr Gln Leu	Tyr 5365	Leu Gly Gly Met	Ser 5370	Tyr Tyr Cys
Lys Ser 5375	His Lys Pro Pro	Ile 5380	Ser Phe Pro Leu	Cys 5385	Ala Asn Gly
Gln Val 5390	Phe Gly Leu Tyr	Lys 5395	Asn Thr Cys Val	Gly 5400	Ser Asp Asn
Val Thr 5405	Asp Phe Asn Ala	Ile 5410	Ala Thr Cys Asp	Trp 5415	Thr Asn Ala
Gly Asp 5420	Tyr Ile Leu Ala	Asn 5425	Thr Cys Thr Glu	Arg 5430	Leu Lys Leu
Phe Ala 5435	Ala Glu Thr Leu	Lys 5440	Ala Thr Glu Glu	Thr 5445	Phe Lys Leu
Ser Tyr 5450	Gly Ile Ala Thr	Val 5455	Arg Glu Val Leu	Ser 5460	Asp Arg Glu
Leu His 5465	Leu Ser Trp Glu	Val 5470	Gly Lys Pro Arg	Pro 5475	Pro Leu Asn
Arg Asn 5480	Tyr Val Phe Thr	Gly 5485	Tyr Arg Val Thr	Lys 5490	Asn Ser Lys
Val Gln 5495	Ile Gly Glu Tyr	Thr 5500	Phe Glu Lys Gly	Asp 5505	Tyr Gly Asp

Ala Val 5510	Val Tyr Arg Gly Thr 5515	Thr Thr Tyr Lys Leu 5520	Asn Val Gly
Asp Tyr 5525	Phe Val Leu Thr Ser 5530	His Thr Val Met Pro 5535	Leu Ser Ala
Pro Thr 5540	Leu Val Pro Gln Glu 5545	His Tyr Val Arg Ile 5550	Thr Gly Leu
Tyr Pro 5555	Thr Leu Asn Ile Ser 5560	Asp Glu Phe Ser Ser 5565	Asn Val Ala
Asn Tyr 5570	Gln Lys Val Gly Met 5575	Gln Lys Tyr Ser Thr 5580	Leu Gln Gly
Pro Pro 5585	Gly Thr Gly Lys Ser 5590	His Phe Ala Ile Gly 5595	Leu Ala Leu
Tyr Tyr 5600	Pro Ser Ala Arg Ile 5605	Val Tyr Thr Ala Cys 5610	Ser His Ala
Ala Val 5615	Asp Ala Leu Cys Glu 5620	Lys Ala Leu Lys Tyr 5625	Leu Pro Ile
Asp Lys 5630	Cys Ser Arg Ile Ile 5635	Pro Ala Arg Ala Arg 5640	Val Glu Cys
Phe Asp 5645	Lys Phe Lys Val Asn 5650	Ser Thr Leu Glu Gln 5655	Tyr Val Phe
Cys Thr 5660	Val Asn Ala Leu Pro 5665	Glu Thr Thr Ala Asp 5670	Ile Val Val
Phe Asp 5675	Glu Ile Ser Met Ala 5680	Thr Asn Tyr Asp Leu 5685	Ser Val Val
Asn Ala 5690	Arg Leu Arg Ala Lys 5695	His Tyr Val Tyr Ile 5700	Gly Asp Pro
Ala Gln 5705	Leu Pro Ala Pro Arg 5710	Thr Leu Leu Thr Lys 5715	Gly Thr Leu
Glu Pro 5720	Glu Tyr Phe Asn Ser 5725	Val Cys Arg Leu Met 5730	Lys Thr Ile

Gly	Pro	Asp	Met	Phe	Leu	Gly	Thr	Cys	Arg	Arg	Cys	Pro	Ala	Glu
5735						5740					5745			
Ile	Val	Asp	Thr	Val	Ser	Ala	Leu	Val	Tyr	Asp	Asn	Lys	Leu	Lys
5750						5755					5760			
Ala	His	Lys	Glu	Lys	Ser	Ala	Gln	Cys	Phe	Lys	Met	Phe	Tyr	Lys
5765						5770					5775			
Gly	Val	Ile	Thr	His	Asp	Val	Ser	Ser	Ala	Ile	Asn	Arg	Pro	Gln
5780						5785					5790			
Ile	Gly	Val	Val	Arg	Glu	Phe	Leu	Thr	Arg	Asn	Pro	Ala	Trp	Arg
5795						5800					5805			
Lys	Ala	Val	Phe	Ile	Ser	Pro	Tyr	Asn	Ser	Gln	Asn	Ala	Val	Ala
5810						5815					5820			
Ser	Lys	Ile	Leu	Gly	Leu	Pro	Thr	Gln	Thr	Val	Asp	Ser	Ser	Gln
5825						5830					5835			
Gly	Ser	Glu	Tyr	Asp	Tyr	Val	Ile	Phe	Thr	Gln	Thr	Thr	Glu	Thr
5840						5845					5850			
Ala	His	Ser	Cys	Asn	Val	Asn	Arg	Phe	Asn	Val	Ala	Ile	Thr	Arg
5855						5860					5865			
Ala	Lys	Ile	Gly	Ile	Leu	Cys	Ile	Met	Ser	Asp	Arg	Asp	Leu	Tyr
5870						5875					5880			
Asp	Lys	Leu	Gln	Phe	Thr	Ser	Leu	Glu	Ile	Pro	Arg	Arg	Asn	Val
5885						5890					5895			
Ala	Thr	Leu	Gln	Ala	Glu	Asn	Val	Thr	Gly	Leu	Phe	Lys	Asp	Cys
5900						5905					5910			
Ser	Lys	Ile	Ile	Thr	Gly	Leu	His	Pro	Thr	Gln	Ala	Pro	Thr	His
5915						5920					5925			
Leu	Ser	Val	Asp	Ile	Lys	Phe	Lys	Thr	Glu	Gly	Leu	Cys	Val	Asp
5930						5935					5940			
Ile	Pro	Gly	Ile	Pro	Lys	Asp	Met	Thr	Tyr	Arg	Arg	Leu	Ile	Ser
5945						5950					5955			
Met	Met	Gly	Phe	Lys	Met	Asn	Tyr	Gln	Val	Asn	Gly	Tyr	Pro	Asn
5960						5965					5970			

Met	Phe	Ile	Thr	Arg	Glu	Glu	Ala	Ile	Arg	His	Val	Arg	Ala	Trp
5975						5980					5985			
Ile	Gly	Phe	Asp	Val	Glu	Gly	Cys	His	Ala	Thr	Arg	Asp	Ala	Val
5990						5995					6000			
Gly	Thr	Asn	Leu	Pro	Leu	Gln	Leu	Gly	Phe	Ser	Thr	Gly	Val	Asn
6005						6010					6015			
Leu	Val	Ala	Val	Pro	Thr	Gly	Tyr	Val	Asp	Thr	Glu	Asn	Asn	Thr
6020						6025					6030			
Glu	Phe	Thr	Arg	Val	Asn	Ala	Lys	Pro	Pro	Pro	Gly	Asp	Gln	Phe
6035						6040					6045			
Lys	His	Leu	Ile	Pro	Leu	Met	Tyr	Lys	Gly	Leu	Pro	Trp	Asn	Val
6050						6055					6060			
Val	Arg	Ile	Lys	Ile	Val	Gln	Met	Leu	Ser	Asp	Thr	Leu	Lys	Gly
6065						6070					6075			
Leu	Ser	Asp	Arg	Val	Val	Phe	Val	Leu	Trp	Ala	His	Gly	Phe	Glu
6080						6085					6090			
Leu	Thr	Ser	Met	Lys	Tyr	Phe	Val	Lys	Ile	Gly	Pro	Glu	Arg	Thr
6095						6100					6105			
Cys	Cys	Leu	Cys	Asp	Lys	Arg	Ala	Thr	Cys	Phe	Ser	Thr	Ser	Ser
6110						6115					6120			
Asp	Thr	Tyr	Ala	Cys	Trp	Asn	His	Ser	Val	Gly	Phe	Asp	Tyr	Val
6125						6130					6135			
Tyr	Asn	Pro	Phe	Met	Ile	Asp	Val	Gln	Gln	Trp	Gly	Phe	Thr	Gly
6140						6145					6150			
Asn	Leu	Gln	Ser	Asn	His	Asp	Gln	His	Cys	Gln	Val	His	Gly	Asn
6155						6160					6165			
Ala	His	Val	Ala	Ser	Cys	Asp	Ala	Ile	Met	Thr	Arg	Cys	Leu	Ala
6170						6175					6180			
Val	His	Glu	Cys	Phe	Val	Lys	Arg	Val	Asp	Trp	Ser	Val	Glu	Tyr
6185						6190					6195			

Pro Ile 6200	Ile Gly Asp Glu Leu 6205	Arg Val Asn Ser Ala 6210	Cys Arg Lys
Val Gln 6215	His Met Val Val Lys 6220	Ser Ala Leu Leu Ala 6225	Asp Lys Phe
Pro Val 6230	Leu His Asp Ile Gly 6235	Asn Pro Lys Ala Ile 6240	Lys Cys Val
Pro Gln 6245	Ala Glu Val Glu Trp 6250	Lys Phe Tyr Asp Ala 6255	Gln Pro Cys
Ser Asp 6260	Lys Ala Tyr Lys Ile 6265	Glu Glu Leu Phe Tyr 6270	Ser Tyr Ala
Thr His 6275	His Asp Lys Phe Thr 6280	Asp Gly Val Cys Leu 6285	Phe Trp Asn
Cys Asn 6290	Val Asp Arg Tyr Pro 6295	Ala Asn Ala Ile Val 6300	Cys Arg Phe
Asp Thr 6305	Arg Val Leu Ser Asn 6310	Leu Asn Leu Pro Gly 6315	Cys Asp Gly
Gly Ser 6320	Leu Tyr Val Asn Lys 6325	His Ala Phe His Thr 6330	Pro Ala Phe
Asp Lys 6335	Ser Ala Phe Thr Asn 6340	Leu Lys Gln Leu Pro 6345	Phe Phe Tyr
Tyr Ser 6350	Asp Ser Pro Cys Glu 6355	Ser His Gly Lys Gln 6360	Val Val Ser
Asp Ile 6365	Asp Tyr Val Pro Leu 6370	Lys Ser Ala Thr Cys 6375	Ile Thr Arg
Cys Asn 6380	Leu Gly Gly Ala Val 6385	Cys Arg His His Ala 6390	Asn Glu Tyr
Arg Gln 6395	Tyr Leu Asp Ala Tyr 6400	Asn Met Met Ile Ser 6405	Ala Gly Phe
Ser Leu 6410	Trp Ile Tyr Lys Gln 6415	Phe Asp Thr Tyr Asn 6420	Leu Trp Asn
Thr Phe 6425	Thr Arg Leu Gln Ser 6430	Leu Glu Asn Val Ala 6435	Tyr Asn Val

Val	Asn	Lys	Gly	His	Phe	Asp	Gly	His	Ala	Gly	Glu	Ala	Pro	Val
6440						6445					6450			
Ser	Ile	Ile	Asn	Asn	Ala	Val	Tyr	Thr	Lys	Val	Asp	Gly	Ile	Asp
6455						6460					6465			
Val	Glu	Ile	Phe	Glu	Asn	Lys	Thr	Thr	Leu	Pro	Val	Asn	Val	Ala
6470						6475					6480			
Phe	Glu	Leu	Trp	Ala	Lys	Arg	Asn	Ile	Lys	Pro	Val	Pro	Glu	Ile
6485						6490					6495			
Lys	Ile	Leu	Asn	Asn	Leu	Gly	Val	Asp	Ile	Ala	Ala	Asn	Thr	Val
6500						6505					6510			
Ile	Trp	Asp	Tyr	Lys	Arg	Glu	Ala	Pro	Ala	His	Val	Ser	Thr	Ile
6515						6520					6525			
Gly	Val	Cys	Thr	Met	Thr	Asp	Ile	Ala	Lys	Lys	Pro	Thr	Glu	Ser
6530						6535					6540			
Ala	Cys	Ser	Ser	Leu	Thr	Val	Leu	Phe	Asp	Gly	Arg	Val	Glu	Gly
6545						6550					6555			
Gln	Val	Asp	Leu	Phe	Arg	Asn	Ala	Arg	Asn	Gly	Val	Leu	Ile	Thr
6560						6565					6570			
Glu	Gly	Ser	Val	Lys	Gly	Leu	Thr	Pro	Ser	Lys	Gly	Pro	Ala	Gln
6575						6580					6585			
Ala	Ser	Val	Asn	Gly	Val	Thr	Leu	Ile	Gly	Glu	Ser	Val	Lys	Thr
6590						6595					6600			
Gln	Phe	Asn	Tyr	Phe	Lys	Lys	Val	Asp	Gly	Ile	Ile	Gln	Gln	Leu
6605						6610					6615			
Pro	Glu	Thr	Tyr	Phe	Thr	Gln	Ser	Arg	Asp	Leu	Glu	Asp	Phe	Lys
6620						6625					6630			
Pro	Arg	Ser	Gln	Met	Glu	Thr	Asp	Phe	Leu	Glu	Leu	Ala	Met	Asp
6635						6640					6645			
Glu	Phe	Ile	Gln	Arg	Tyr	Lys	Leu	Glu	Gly	Tyr	Ala	Phe	Glu	His
6650						6655					6660			

Ile Val 6665	Tyr Gly Asp Phe Ser 6670	His Gly Gln Leu Gly 6675	Gly Leu His
Leu Met 6680	Ile Gly Leu Ala Lys 6685	Arg Ser Gln Asp Ser 6690	Pro Leu Lys
Leu Glu 6695	Asp Phe Ile Pro Met 6700	Asp Ser Thr Val Lys 6705	Asn Tyr Phe
Ile Thr 6710	Asp Ala Gln Thr Gly 6715	Ser Ser Lys Cys Val 6720	Cys Ser Val
Ile Asp 6725	Leu Leu Leu Asp Asp 6730	Phe Val Glu Ile Ile 6735	Lys Ser Gln
Asp Leu 6740	Ser Val Ile Ser Lys 6745	Val Val Lys Val Thr 6750	Ile Asp Tyr
Ala Glu 6755	Ile Ser Phe Met Leu 6760	Trp Cys Lys Asp Gly 6765	His Val Glu
Thr Phe 6770	Tyr Pro Lys Leu Gln 6775	Ala Ser Gln Ala Trp 6780	Gln Pro Gly
Val Ala 6785	Met Pro Asn Leu Tyr 6790	Lys Met Gln Arg Met 6795	Leu Leu Glu
Lys Cys 6800	Asp Leu Gln Asn Tyr 6805	Gly Glu Asn Ala Val 6810	Ile Pro Lys
Gly Ile 6815	Met Met Asn Val Ala 6820	Lys Tyr Thr Gln Leu 6825	Cys Gln Tyr
Leu Asn 6830	Thr Leu Thr Leu Ala 6835	Val Pro Tyr Asn Met 6840	Arg Val Ile
His Phe 6845	Gly Ala Gly Ser Asp 6850	Lys Gly Val Ala Pro 6855	Gly Thr Ala
Val Leu 6860	Arg Gln Trp Leu Pro 6865	Thr Gly Thr Leu Leu 6870	Val Asp Ser
Asp Leu 6875	Asn Asp Phe Val Ser 6880	Asp Ala Asp Ser Thr 6885	Leu Ile Gly
Asp Cys 6890	Ala Thr Val His Thr 6895	Ala Asn Lys Trp Asp 6900	Leu Ile Ile

Ser	Asp	Met	Tyr	Asp	Pro	Arg	Thr	Lys	His	Val	Thr	Lys	Glu	Asn
6905						6910					6915			
Asp	Ser	Lys	Glu	Gly	Phe	Phe	Thr	Tyr	Leu	Cys	Gly	Phe	Ile	Lys
6920						6925					6930			
Gln	Lys	Leu	Ala	Leu	Gly	Gly	Ser	Ile	Ala	Val	Lys	Ile	Thr	Glu
6935						6940					6945			
His	Ser	Trp	Asn	Ala	Asp	Leu	Tyr	Lys	Leu	Met	Gly	His	Phe	Ser
6950						6955					6960			
Trp	Trp	Thr	Ala	Phe	Val	Thr	Asn	Val	Asn	Ala	Ser	Ser	Ser	Glu
6965						6970					6975			
Ala	Phe	Leu	Ile	Gly	Ala	Asn	Tyr	Leu	Gly	Lys	Pro	Lys	Glu	Gln
6980						6985					6990			
Ile	Asp	Gly	Tyr	Thr	Met	His	Ala	Asn	Tyr	Ile	Phe	Trp	Arg	Asn
6995						7000					7005			
Thr	Asn	Pro	Ile	Gln	Leu	Ser	Ser	Tyr	Ser	Leu	Phe	Asp	Met	Ser
7010						7015					7020			
Lys	Phe	Pro	Leu	Lys	Leu	Arg	Gly	Thr	Ala	Val	Met	Ser	Leu	Lys
7025						7030					7035			
Glu	Asn	Gln	Ile	Asn	Asp	Met	Ile	Tyr	Ser	Leu	Leu	Glu	Lys	Gly
7040						7045					7050			
Arg	Leu	Ile	Ile	Arg	Glu	Asn	Asn	Arg	Val	Val	Val	Ser	Ser	Asp
7055						7060					7065			
Ile	Leu	Val	Asn	Asn										
7070														

<210> 30
 <211> 1178
 <212> PRT
 <213> SARS-CoV Shanghai QXC

<400> 30

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
1 5 10 15

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
20 25 30

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
35 40 45

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro
50 55 60

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln
65 70 75 80

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr
85 90 95

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln
100 105 110

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu
115 120 125

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu
130 135 140

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val
145 150 155 160

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys
165 170 175

Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met
180 185 190

Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn
195 200 205

Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys
210 215 220

Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro
225 230 235 240

Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr
 245 250 255
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr
 260 265 270
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys
 275 280 285
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys
 290 295 300
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys
 305 310 315 320
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp
 325 330 335
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu
 340 345 350
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu
 355 360 365
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val
 370 375 380
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile
 385 390 395 400
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala
 405 410 415
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro
 420 425 430
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp
 435 440 445
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu
 450 455 460
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu
 465 470 475 480
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu
 485 490 495

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly
 500 505 510

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Thr Val
 515 520 525

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn
 530 535 540

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala
 545 550 555 560

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn
 565 570 575

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu
 580 585 590

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu
 595 600 605

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp
 610 615 620

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro
 625 630 635 640

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr
 645 650 655

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr
 660 665 670

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro
 675 680 685

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys
 690 695 700

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr
 705 710 715 720

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe
 725 730 735

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg
 740 745 750
 Gly Glu Asp Met Ser Phe Leu Glu Glu Asp Ala Pro Tyr Met Val Gly
 755 760 765
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys
 770 775 780
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val
 785 790 795 800
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly
 805 810 815
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala
 820 825 830
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu
 835 840 845
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu
 850 855 860
 Ala Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala
 865 870 875 880
 Thr Ile Gln Arg Lys Tyr Lys Gly Val Lys Ile Gln Glu Gly Ile Val
 885 890 895
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala
 900 905 910
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met
 915 920 925
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg
 930 935 940
 Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro
 945 950 955 960
 Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr
 965 970 975
 Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg
 980 985 990

Asp	Trp	Ser	Tyr	Ser	Gly	Gln	Arg	Thr	Glu	Leu	Gly	Val	Glu	Phe	Leu
		995					1000					1005			
Lys	Arg	Gly	Asp	Lys	Ile	Val	Tyr	His	Thr	Leu	Glu	Ser	Pro	Val	
	1010					1015					1020				
Glu	Phe	His	Leu	Asp	Gly	Glu	Val	Leu	Ser	Leu	Asp	Lys	Leu	Lys	
	1025					1030					1035				
Ser	Leu	Leu	Ser	Leu	Arg	Glu	Val	Lys	Thr	Ile	Lys	Val	Phe	Thr	
	1040					1045					1050				
Thr	Val	Asp	Asn	Thr	Asn	Leu	His	Thr	Gln	Leu	Val	Asp	Met	Ser	
	1055					1060					1065				
Met	Thr	Tyr	Gly	Gln	Gln	Phe	Gly	Pro	Thr	Tyr	Leu	Asp	Gly	Ala	
	1070					1075					1080				
Asp	Val	Thr	Lys	Ile	Lys	Pro	His	Val	Asn	His	Glu	Gly	Lys	Thr	
	1085					1090					1095				
Phe	Phe	Val	Leu	Pro	Ser	Asp	Asp	Thr	Leu	Arg	Ser	Glu	Ala	Phe	
	1100					1105					1110				
Glu	Tyr	Tyr	His	Thr	Leu	Asp	Glu	Ser	Phe	Leu	Gly	Arg	Tyr	Met	
	1115					1120					1125				
Ser	Ala	Leu	Asn	His	Thr	Lys	Lys	Trp	Lys	Phe	Pro	Gln	Val	Gly	
	1130					1135					1140				
Gly	Leu	Thr	Ser	Ile	Lys	Trp	Ala	Asp	Asn	Asn	Cys	Tyr	Leu	Ser	
	1145					1150					1155				
Ser	Val	Leu	Leu	Ala	Leu	Gln	Gln	Leu	Glu	Val	Lys	Phe	Asn	Ala	
	1160					1165					1170				
Pro	Ala	Leu	Gln	Glu											
	1175														

<210> 31
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 <213> SARS-CoV Shanghai QXC

<400> 31

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
 1 5 10 15

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
 20 25 30

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
 35 40 45

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro
 50 55 60

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln
 65 70 75 80

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr
 85 90 95

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln
 100 105 110

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu
 115 120 125

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu
 130 135 140

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val
 145 150 155 160

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys
 165 170 175

Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met
 180 185 190

Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn
 195 200 205

Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys
 210 215 220

Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro
 225 230 235 240
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr
 245 250 255
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr
 260 265 270
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys
 275 280 285
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys
 290 295 300
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys
 305 310 315 320
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp
 325 330 335
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu
 340 345 350
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu
 355 360 365
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val
 370 375 380
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile
 385 390 395 400
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala
 405 410 415
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro
 420 425 430
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp
 435 440 445
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu
 450 455 460
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu
 465 470 475 480

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu
 485 490 495

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly
 500 505 510

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Thr Val
 515 520 525

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn
 530 535 540

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala
 545 550 555 560

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn
 565 570 575

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu
 580 585 590

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu
 595 600 605

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp
 610 615 620

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro
 625 630 635 640

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr
 645 650 655

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr
 660 665 670

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro
 675 680 685

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys
 690 695 700

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr
 705 710 715 720
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe
 725 730 735
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg
 740 745 750
 Gly Glu Asp Met Ser Phe Leu Glu Glu Asp Ala Pro Tyr Met Val Gly
 755 760 765
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys
 770 775 780
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val
 785 790 795 800
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly
 805 810 815
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala
 820 825 830
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu
 835 840 845
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu
 850 855 860
 Ala Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala
 865 870 875 880
 Thr Ile Gln Arg Lys Tyr Lys Gly Val Lys Ile Gln Glu Gly Ile Val
 885 890 895
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala
 900 905 910
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met
 915 920 925
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg
 930 935 940
 Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro
 945 950 955 960

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr
965 970 975

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg
980 985 990

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu
995 1000 1005

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val
1010 1015 1020

Glu Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys
1025 1030 1035

Ser Leu Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr
1040 1045 1050

Thr Val Asp Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser
1055 1060 1065

Met Thr Tyr Gly Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala
1070 1075 1080

Asp Val Thr Lys Ile Lys Pro His Val Asn His Glu Gly Lys Thr
1085 1090 1095

Phe Phe Val Leu Pro Ser Asp Asp Thr Leu Arg Ser Glu Ala Phe
1100 1105 1110

Glu Tyr Tyr His Thr Leu Asp Glu Ser Phe Leu Gly Arg Tyr Met
1115 1120 1125

Ser Ala Leu Asn His Thr Lys Lys Trp Lys Phe Pro Gln Val Gly
1130 1135 1140

Gly Leu Thr Ser Ile Lys Trp Ala Asp Asn Asn Cys Tyr Leu Ser
1145 1150 1155

Ser Val Leu Leu Ala Leu Gln Gln Leu Glu Val Lys Phe Asn Ala
1160 1165 1170

Pro Ala Leu Gln Glu
1175

<210> 32
 <211> 507
 <212> PRT
 <213> SARS-CoV Shanghai LY

<400> 32

Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu
 1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly
 20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
 35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
 50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
 65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
 85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
 100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
 115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
 130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn
 145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
 165 170 175

Leu Asn Gly Gly Val Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
 180 185 190

Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
 195 200 205

Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
 210 215 220

Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
 225 230 235 240
 Phe Thr Glu Arg Ser Asp Lys Ser Cys Glu His Gln Thr Pro Phe Glu
 245 250 255
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
 260 265 270
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
 275 280 285
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
 290 295 300
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
 305 310 315 320
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
 325 330 335
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
 340 345 350
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
 355 360 365
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
 370 375 380
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
 385 390 395 400
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
 405 410 415
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
 420 425 430
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
 435 440 445
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
 450 455 460
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
 465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly
500 505

<210> 33
<211> 507
<212> PRT
<213> SARS-CoV Shanghai LY

<400> 33

Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu
1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn
145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
165 170 175

Leu Asn Gly Gly Val Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
180 185 190

Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
 195 200 205
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
 210 215 220
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
 225 230 235 240
 Phe Thr Glu Arg Ser Asp Lys Ser Cys Glu His Gln Thr Pro Phe Glu
 245 250 255
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
 260 265 270
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
 275 280 285
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
 290 295 300
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
 305 310 315 320
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
 325 330 335
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
 340 345 350
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
 355 360 365
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
 370 375 380
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
 385 390 395 400
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
 405 410 415

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
420 425 430

Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
435 440 445

Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
450 455 460

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly
500 505

<210> 34
<211> 422
<212> PRT
<213> SARS-CoV CUHK-W1

<400> 34

Met Ser Asp Asn Gly Pro Gln Ser Asn Gln Arg Ser Ala Pro Arg Ile
1 5 10 15

Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp Asn Asn Gln Asn Gly Gly
20 25 30

Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg Pro Gln Gly Leu Pro Asn
35 40 45

Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
50 55 60

Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
65 70 75 80

Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
85 90 95

Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
100 105 110

Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
115 120 125

Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
 130 135 140

Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
 145 150 155 160

Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
 165 170 175

Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
 180 185 190

Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
 195 200 205

Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
 210 215 220

Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
 225 230 235 240

Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
 245 250 255

Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
 260 265 270

Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
 275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
 290 295 300

Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
 305 310 315 320

Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
 325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
 340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
 355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
 370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
 385 390 395 400

Met Asp Asp Phe Ser Arg Gln Leu Gln Asn Ser Met Ser Gly Ala Ser
 405 410 415

Ala Asp Ser Thr Gln Ala
 420

<210> 35
 <211> 1255
 <212> PRT
 <213> SARS-CoV CUHK-W1

<400> 35

Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser Asp Leu
 1 5 10 15

Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
 20 25 30

His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
 35 40 45

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
 50 55 60

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Asp Asn Pro Val
 65 70 75 80

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
 85 90 95

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
 100 105 110

Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys
 115 120 125

Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
 130 135 140

Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
 145 150 155 160

Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
 165 170 175

Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly
 180 185 190
 Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp
 195 200 205
 Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu
 210 215 220
 Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro
 225 230 235 240
 Ala Gln Asp Thr Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr
 245 250 255
 Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile
 260 265 270
 Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys
 275 280 285
 Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn
 290 295 300
 Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr
 305 310 315 320
 Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser
 325 330 335
 Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr
 340 345 350
 Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly
 355 360 365
 Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala
 370 375 380
 Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly
 385 390 395 400
 Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe
 405 410 415

Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser
 420 425 430

Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu
 435 440 445

Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly
 450 455 460

Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp
 465 470 475 480

Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val
 485 490 495

Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly
 500 505 510

Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn
 515 520 525

Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg
 530 535 540

Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp
 545 550 555 560

Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys
 565 570 575

Ser Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser
 580 585 590

Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr
 595 600 605

Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr
 610 615 620

Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu
 625 630 635 640

His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile
 645 650 655

Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser Gln Lys
 660 665 670

Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser Ile Ala
 675 680 685
 Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile Ser Ile
 690 695 700
 Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser Val Asp Cys
 705 710 715 720
 Asn Met Tyr Ile Cys Gly Asp Ser Thr Glu Cys Ala Asn Leu Leu Leu
 725 730 735
 Gln Tyr Gly Ser Phe Cys Thr Gln Leu Asn Arg Ala Leu Ser Gly Ile
 740 745 750
 Ala Ala Glu Gln Asp Arg Asn Thr Arg Glu Val Phe Ala Gln Val Lys
 755 760 765
 Gln Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe
 770 775 780
 Ser Gln Ile Leu Pro Asp Pro Leu Lys Pro Thr Lys Arg Ser Phe Ile
 785 790 795 800
 Glu Asp Leu Leu Phe Asn Lys Val Thr Leu Ala Asp Ala Gly Phe Met
 805 810 815
 Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp Leu Ile
 820 825 830
 Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu Leu Thr
 835 840 845
 Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly Thr Ala
 850 855 860
 Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe
 865 870 875 880
 Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn
 885 890 895
 Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala
 900 905 910

Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
 915 920 925
 Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu
 930 935 940
 Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn
 945 950 955 960
 Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp
 965 970 975
 Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln
 980 985 990
 Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala
 995 1000 1005
 Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp
 1010 1015 1020
 Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala
 1025 1030 1035
 Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln
 1040 1045 1050
 Glu Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys
 1055 1060 1065
 Ala Tyr Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser
 1070 1075 1080
 Trp Phe Ile Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr
 1085 1090 1095
 Thr Asp Asn Thr Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly
 1100 1105 1110
 Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp
 1115 1120 1125
 Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His Thr Ser
 1130 1135 1140
 Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val
 1145 1150 1155

Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
1160 1165 1170

Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr
1175 1180 1185

Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile
1190 1195 1200

Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys
1205 1210 1215

Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly
1220 1225 1230

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1235 1240 1245

Gly Val Lys Leu His Tyr Thr
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ctctaaacga ac 72

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<211> 71
<212> DNA
<213> SARS coronavirus ZMY 1

<400> 37
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tctaaacgaa c 71

<210> 38
<211> 68
<212> DNA
<213> SARS coronavirus BJ03

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aaacgaac 68

<210> 39
 <211> 62
 <212> DNA
 <213> SARS-CoV Urbani

<400> 39
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 ct 62

<210> 40
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 <212> DNA
 <213> SARS-CoV Urbani

<400> 40
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<210> 41
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 <213> SARS-CoV Urbani

<400> 41
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<210> 42
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 <212> DNA
 <213> SARS-CoV Urbani

<400> 42
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<210> 43
 <211> 39
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<400> 43
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<210> 44
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<400> 44
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<210> 45
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<210> 46
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<400> 46
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<210> 47
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 atattagggtt tttacctac 19

<210> 48
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<400> 48
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<210> 49
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<400> 49
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<210> 51
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<400> 51
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 <400> 54
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 <210> 55
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 <400> 55
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 <400> 56
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 <210> 57
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 <210> 58
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 <400> 62
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 <210> 63
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 ac 62

 <210> 64
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<210> 65
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 <210> 66
 <211> 32
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 <400> 66
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 <400> 67
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 <400> 68
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 <210> 69
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<210>	75	
<211>	23	
<212>	DNA	
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<400>	75	
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<210> 76
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 <400> 76
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 <210> 77
 <211> 57
 <212> DNA
 <213> SARS coronavirus CUHK-Su10

 <400> 77
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 <210> 78
 <211> 56
 <212> DNA
 <213> SARS coronavirus BJ04

 <400> 78
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 <210> 79
 <211> 53
 <212> DNA
 <213> SARS coronavirus BJ01

 <400> 79
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 <210> 80
 <211> 422
 <212> PRT
 <213> SARS coronavirus Shanghai LY

 <400> 80

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 Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp Asn Asn Gln Asn Gly Gly
 20 25 30

 Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg Pro Gln Gly Leu Pro Asn
 35 40 45

 Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
 50 55 60

Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
 65 70 75 80
 Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
 85 90 95
 Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
 100 105 110
 Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
 115 120 125
 Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
 130 135 140
 Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
 145 150 155 160
 Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
 165 170 175
 Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
 180 185 190
 Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
 195 200 205
 Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
 210 215 220
 Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
 225 230 235 240
 Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
 245 250 255
 Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
 260 265 270
 Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
 275 280 285
 Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
 290 295 300
 Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
 305 310 315 320

Ile Gly Met Glu Ala Ala Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
385 390 395 400

Met Asp Asp Phe Ser Arg Gln Leu Gln Asn Ser Met Ser Gly Ala Ser
405 410 415

Ala Asp Ser Thr Gln Ala
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<210> 81
<211> 221
<212> PRT
<213> SARS coronavirus Tor2

<400> 81

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20 25 30

Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile
35 40 45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe
50 55 60

Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala
65 70 75 80

Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val
85 90 95

Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn
100 105 110

Pro Glu Thr Asn Ile Leu Leu Asn Val Pro Leu Arg Gly Thr Ile Val
115 120 125

Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile
130 135 140

Arg Gly His Leu Arg Met Ala Gly His Ser Leu Gly Arg Cys Asp Ile
145 150 155 160

Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser
165 170 175

Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe
180 185 190

Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp
195 200 205

His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val Gln
210 215 220

<210> 82
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<213> SARS coronavirus Shanghai QXC
<400> 82

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Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met
20 25 30

Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile
35 40 45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe
50 55 60

Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala
65 70 75 80

Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val
85 90 95

Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn
100 105 110

Pro Glu Thr Asn Ile Leu Pro Asn Val Pro Leu Arg Gly Thr Ile Val
115 120 125

Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile
130 135 140

Arg Gly His Leu Arg Met Ala Gly His Ser Leu Gly Arg Cys Asp Ile
145 150 155 160

Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser
165 170 175

Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe
180 185 190

Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp
195 200 205

His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val Gln
210 215 220

<210> 83
<211> 221
<212> PRT
<213> SARS coronavirus Shanghai QXC
<400> 83

Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu Leu Lys Gln Leu Leu
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Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met
20 25 30

Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile
35 40 45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe
50 55 60

Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala
65 70 75 80

Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val
85 90 95

Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn
100 105 110

Pro Glu Thr Asn Ile Leu Pro Asn Val Pro Leu Arg Gly Thr Ile Val
 115 120 125

Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile
 130 135 140

Arg Gly His Leu Arg Met Ala Gly His Ser Leu Gly Arg Cys Asp Ile
 145 150 155 160

Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser
 165 170 175

Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe
 180 185 190

Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp
 195 200 205

His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val Gln
 210 215 220

<210> 84
 <211> 76
 <212> PRT
 <213> SARS coronavirus Tor2

<400> 84

Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser
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Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
 20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
 35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
 50 55 60

Leu Asn Ser Ser Glu Gly Val Pro Asp Leu Leu Val
 65 70 75

<210> 85
 <211> 76
 <212> PRT
 <213> SARS coronavirus Shanghai QXC

<400> 85

Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser
 1 5 10 15

Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
 20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
 35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
 50 55 60

Leu Asn Ser Pro Glu Gly Val Pro Asp Leu Leu Val
 65 70 75

<210> 86
 <211> 76
 <212> PRT
 <213> SARS coronavirus Shanghai QXC

<400> 86

Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser
 1 5 10 15

Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
 20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
 35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
 50 55 60

Leu Asn Ser Pro Glu Gly Val Pro Asp Leu Leu Val
 65 70 75

<210> 87
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<213> SARS coronavirus CUHK-W1

<400> 87

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Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
50 55 60

Leu Asn Ser Ser Glu Gly Val Pro Asp Leu Leu Val
65 70 75